158579

Environmental
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24 August 1995
Reference: J9601.02.01

Mr. Jeff Dodd
On-Scene Coordinator
United States Environmental Protection Agency
303 Methodist Building
11th and Chaplin Streets
Wheeling, West Virginia 26003

ERM.

Re: Revised Supplemental Removal Plan, Virginia Scrap Iron and Metal, Roanoke Avenue Site, Consent Docket No. III-95-09-DC

Dear Jeff:

Please find enclosed, one (1) copy of the Revised Supplemental Removal Plan (SRP) for the referenced site. This revision addresses the comments presented in your 18 August 1995 letter. We have also incorporated two other minor modifications to the Revised SRP as a result of our receipt of TCLP analytical results from the two composite samples collected from the debris piles and the selection of a Removal Action Contractor. These revisions are summarized below. All revisions to the text are in bold faced type for easy recognition.

Based on the TCLP results, we have assumed that the material can be transported to a permitted, non-hazardous waste disposal facility, such as the Chambers Development Inc. facility in Amelia, Virginia with only minimal additional characterization. However, provisions remain in the SRP to transfer the material to a hazardous waste disposal facility, should the additional characterization data exceed the permit levels of the non-hazardous facility.

We also propose to complete the waste characterization process prior to any excavation activities. Once we have completely characterized the material, and it has been accepted by the disposal facility and the disposal facility has been approved by the USEPA, we can load the material directly on the truck for transport from the Site. This eliminates the need for roll-off containers and an intermediate staging area, as well as reducing the cost for disposal significantly.

Secondly, ERM-EnviroClean, ERM, Inc.'s construction affiliate, has been selected by Mr. Sam Golden to act as the Removal Action Contractor for

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this project. As such, the project organizational chart and health and safety plan reflect this selection. The USEPA has recently reviewed ERM-EnviroClean's qualifications, as they performed the Removal Action at the Old Salem Tannery site in Salem, Virginia. In this case we request that a separate qualifications package not be required for there approval at this site.

ERM

Should you have any questions or comments on the enclosed SRP, please do not hesitate to contact me. We are prepared to implement the removal action upon your approval of this plan.

Sincerely,

Montgomery S Bennett /FOR

C. B. Huggins V, P.G., P. Hg.
Branch Manager &
Associate

Enclosure: Revised Supplemental Removal Action Plan

cc: Mr. Sam Golden
Virginia Scrap Iron & Metal

Mr. Charlie Williams
Gentry Locke Rakes & Moore

Virginia Scrap Iron & Metal Company

Revised Supplemental Removal Plan

Roanoke Avenue Site

Roanoke, Virginia

Docket No. III-95-09-DC

24 August 1995

Environmental Resources Management, Inc.
3140 Chaparral Drive S.W., Suite 201
Roanoke, VA 24018

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A HEALTH AND SAFETY PLAN

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1.0 INTRODUCTION

Environmental Resources Management, Inc. (ERM) was retained by Virginia Scrap Iron and Metal Co., Inc. (Respondent) to prepare a Response Action Plan (RAP) for the property located north of the terminus of Roanoke Avenue (Site) in Roanoke, Virginia. The purpose of the RAP was to develop a work plan to identify the extent of soil and material with total lead concentrations exceeding 1,000 milligrams per kilogram (mg/Kg) at the Site, in accordance with the Administrative Order by Consent (Order) Docket No. III-95-09-DC for Removal Response Action between the United States Environmental Protection Agency (USEPA) and Respondent dated 1 March 1995.

This document was prepared as a Supplemental Removal Plan (SRP) to the previously submitted RAP. The SRP includes all necessary Work Plans as specified in Section 8.4 of the Order for the implementation of the removal of soil and material containing total lead concentrations in excess of the Removal Response Goal (RRG) of 1,000 mg/Kg. In order to delineate the horizontal and vertical extent of soil and material containing lead in excess of the RRG, ERM completed a field sampling and analysis program on behalf of the Respondent. This program was implemented in accordance with the USEPA approved RAP dated 1 March 1995. The results of the field program were presented to the USEPA in the Field Investigation Report dated 17 May 1995. The Field Investigation Report was used as a basis for preparing the SRP.

The SRP is organized as follows:

- *Section 1.0* - Introduction with site description and background;
- *Section 2.0* - Scope of Work for the removal program;
- *Section 3.0* - Execution Plan, which explains the organization of the team for the removal program;
- *Section 4.0* - General Requirements of the removal program, which provides some details on the permit requirements, availability of utilities, and other pertinent information;
- *Section 5.0* - Soil/Material Removal Plan;
- *Section 6.0* - Confirmation Sampling Plan;
- *Section 7.0* - Equipment Decontamination Plan;
- *Section 8.0* - Site Security Plan;
- *Section 9.0* - Site Restoration Plan;

- *Section 10.0* - Erosion and Sedimentation Control Plan;
- *Section 11.0* - Construction Quality Assurance Plan; and
- *Section 12.0* - Implementation Schedule.

The SRP includes a site-specific Health and Safety Plan (HASP), which is presented as **Appendix A**. All field activities will be conducted in accordance with the Quality Assurance Project Plan (QAPP) presented in the USEPA approved RAP dated 1 March 1995.

1.1 *SITE DESCRIPTION*

The Site is located in a mixed industrial/commercial area of western Roanoke, Virginia (**Figure 1**). The property is currently used for the recycling of non-precious metals and storage of scrap iron and steel. Scrap metal stored on-site is subsequently sold to recycling mills. A portion of the property is used for tractor-trailer storage and transporting stock materials. Buildings on-site include a small cinder block office at the site entrance and several small storage buildings located in the central portion of the Site. Access to the Site is restricted by fencing and locked gates.

The Site is bordered to the north, west, and east sides by a bend in the Roanoke River. The Norfolk and Southern Railroad marks the southern border of the Site. Topography at the Site generally slopes gently northward towards the Roanoke River. However, historical regrading activities have created varying, localized surface water runoff patterns at the Site.

1.2 *BACKGROUND INFORMATION*

The Site was previously owned by the Virginia Holding Company and was purchased by Virginia Scrap Iron and Metal Co., Inc. (VSIM) in October 1976. The facility is currently in operation. Previous investigations at the Site include a 1985 investigation by the City of Roanoke's Hazardous Materials Team and an environmental assessment (EA) conducted by Dewberry & Davis in 1991 (Phase I) and 1992 (Phase IIA). The 1985 investigation was related to the deposition of 55 gallon drums and some tanks in the northeastern corner of the property resulting from the November 1985 flood. The tanks were removed and scrapped by a contractor retained by the City of Roanoke. The City of Roanoke Hazardous Materials Team investigated the drums and tanks and determined that hazardous materials were not present. The drums were not removed by the city.

Source: USGS Roanoke, Virginia 7.5 Minute Topographic Quadrangle Map, 1984.
Scale: 1 inch = 2000 feet.

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Drawn By /Date:	RGM/7-7-95
Checked By /Date:	
Revised By /Date:	
Checked By /Date:	

Figure 1

Site Location Map

Virginia Scrap Iron & Metal Co.
Roanoke Avenue Site
Roanoke, Virginia

ERM
3140 Chaparral Drive, S.W., Suite 201
Roanoke, Virginia 24018
(703) 776-3515

The EA was conducted for the City of Roanoke as part of the City's Roanoke River Flood Reduction Project (RRFRP). The EA consisted of passive soil gas sampling, hand auger soil sampling, ground water sampling from a temporary well, and a composite sample of water from drums. The EA reported low to moderate levels (less than 100 ppm) of total petroleum hydrocarbons (TPH) in soils, TPH concentrations between 1 and 3 ppm in ground water, and no significant constituent detections in the composite drum sample. The EA reported one lead concentration on the site which exceeded the MCL in ground water. However, the sample was collected from a temporary well. It is not currently known if the sample was filtered or unfiltered. No lead concentrations in soils exceeded 1000 mg/Kg.

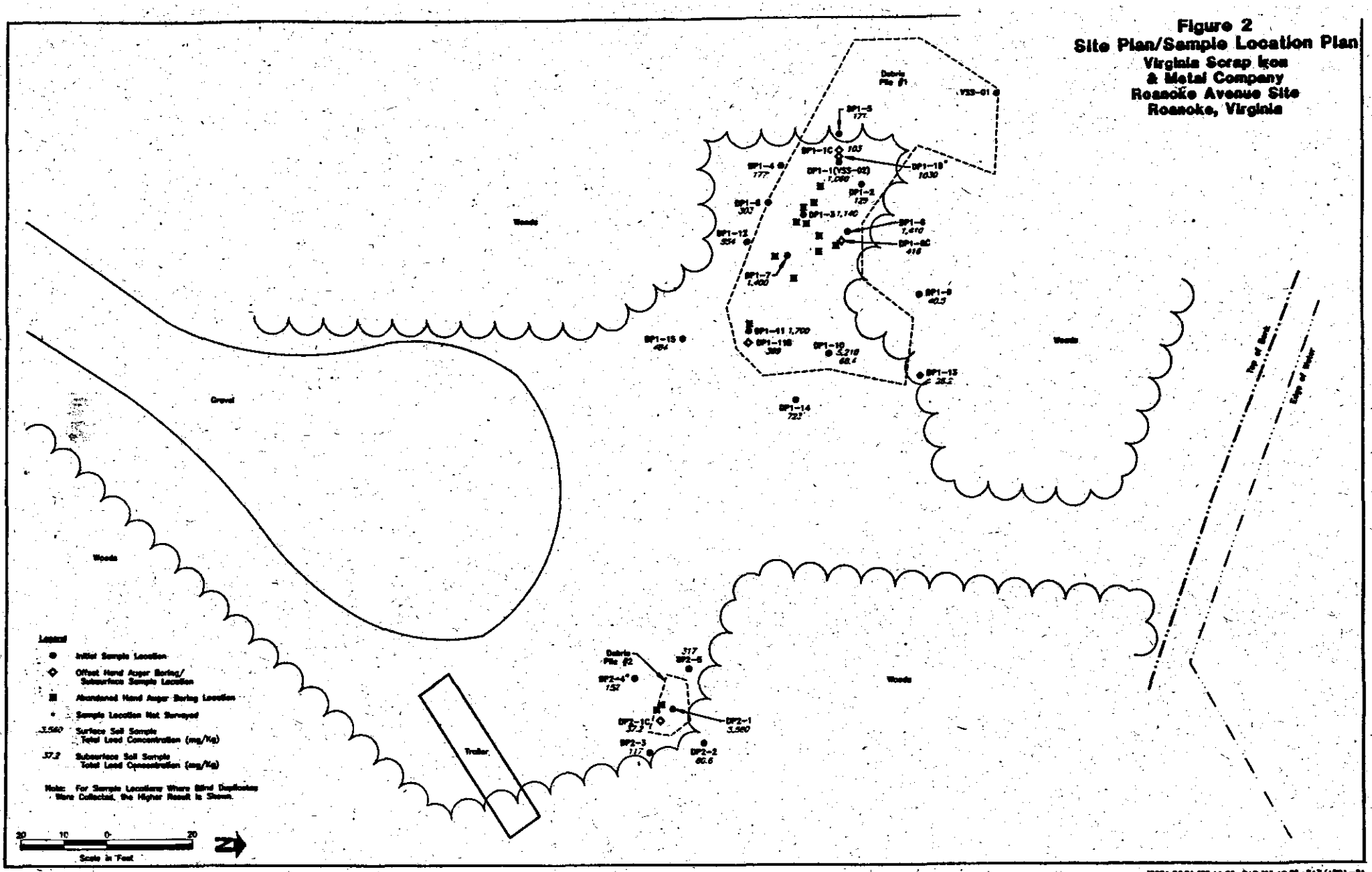
In January 1994, the United States Army Corps of Engineers referred the Site to the Region III of the United States Environmental Protection Agency (USEPA) following the completion of the RRFRP assessment. The USEPA Technical Assistance Team (TAT) conducted a Site Assessment in February 1994, which included the collection of several soil and surface water samples across the Site. One sample collected from Debris Pile #1 (Figure 2) contained a lead concentration exceeding 1000 mg/Kg (2,840 mg/Kg). This sample (VSS-2) initiated USEPA's response action.

In response to the lead concentrations detected at the Site, an Administrative Order by Consent (Order) was drafted by USEPA Region III to address the delineation and removal of lead contaminated soils above the 1,000 mg/Kg RRG. The USEPA's analytical summary, as provided to the Respondent, indicated a lead level in excess of 1,000 mg/Kg in soil sample VSS-2, which was collected from Debris Pile #1 in the northeastern portion of the site (Figure 2). Given that sample VSS-1 from Debris Pile #1 exhibited a lead concentration of 35 mg/Kg, the lead occurrence appeared to be isolated. However, a similar debris pile (Debris Pile #2) was identified during a site reconnaissance conducted by ERM during the field sampling and analysis program for this SRP (Figure 2). Therefore, Debris Pile #2 was also targeted for sampling.

1.3 *SUMMARY OF FIELD SAMPLING PROGRAM*

In accordance with Section 8.3 of the Order, the Respondent implemented a field sampling program to delineate the horizontal and vertical extent of the media containing lead above the RRG. This field sampling program was implemented as per the USEPA-approved RAP dated 1 March 1995. The results of the field sampling program were presented to the USEPA in the Field Investigation Report dated 17 May 1995.

Figure 2
Site Plan/Sample Location Plan
Virginia Scrap Iron & Metal Company
Roanoke Avenue Site
Roanoke, Virginia



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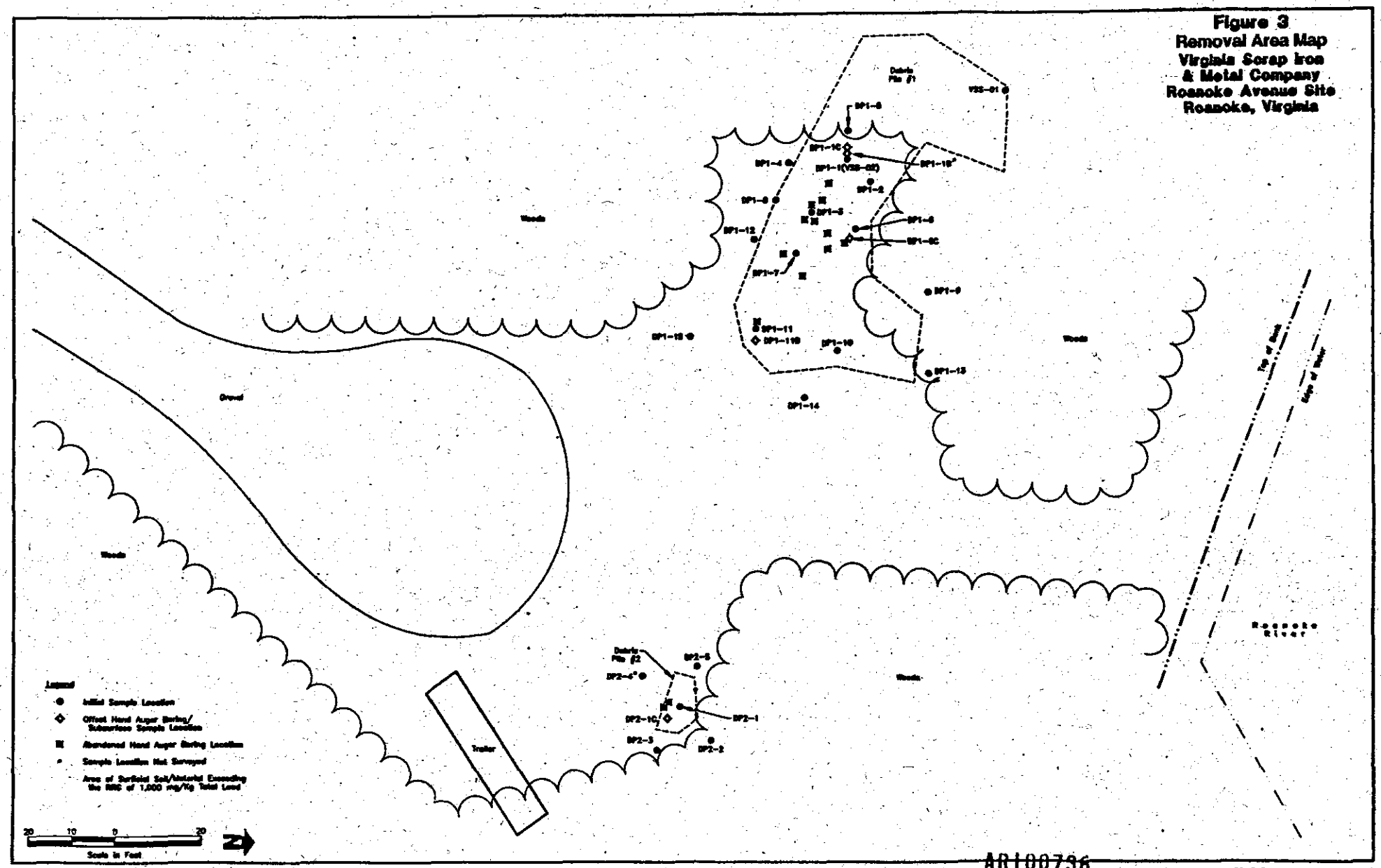
A total of 26 soil and material delineation samples were collected for analysis for total lead during the course of the investigation. A total of 15 surface soil and 5 subsurface soil samples were collected from Debris Pile #1. A total of 5 surface soil and 1 subsurface soil samples were collected from Debris Pile #2. In addition, a total of 6 quality assurance samples (2 equipment blanks, 2 blind duplicates, and 2 matrix spike/matrix spike duplicates) were collected during this investigation in accordance with the USEPA-approved RAP. **A summary table of the analytical results from the Field Investigation Report is included as Appendix B.**

The lateral extent of soil and material with total lead concentrations exceeding the RRG in Debris Pile #1 and in Debris Pile #2 is illustrated on **Figure 3**. The areas exceeding the RRG shown on **Figure 3** are bounded by surface soil sample locations that exhibited total lead concentrations beneath the RRG. Because the actual boundaries between locations that exceeded the RRG and locations that were beneath the RRG could not be extrapolated, the locations beneath the RRG were used as conservative estimates of the boundaries.

The area exceeding the RRG in Debris Pile #1 is generally flat (approximately one foot thick or less), but rises to an approximately 2.5-foot high mound at its western end in the vicinity of sample location DP1-1 (**Figure 3**). **The portion of Debris Pile #1 which contains material which exceeds the RRG is approximately 60 feet long and 50 feet wide.** The volume of soil and material in Debris Pile #1 with lead concentrations exceeding the RRG is estimated to be approximately 129.2 cubic yards (an estimated 193.8 tons). This volume was calculated as follows: based on field measurements, the area was divided into three sections of different thicknesses (2.5 feet, 1,5 feet, and 1.0 foot). The area around sample location DP1-1, north of a line drawn between locations DP1-2 and DP1-4, was assumed to be 2.5 feet thick. The area south of the line drawn between locations DP1-2 and DP1-4 and north of a line drawn between locations DP1-9 and DP1-12 was assumed to be 1.5 feet thick. The remaining area of Debris Pile #1 exceeding the RRG was assumed to be 1.0 foot thick. In addition, it was assumed that the removal would extend to an approximate depth of 0.5 foot within the native soil beneath the entire area exceeding the RRG. The sum of the volumes for the three areas of differing thicknesses and the volume of native soil beneath the area of Debris Pile #1 to be removed was calculated to provide the overall volume of material to be removed from Debris Pile #1. The tonnage was estimated utilizing an approximated bulk density of 1.5 tons/cubic yard.

The volume of soil and material in the area of Debris Pile #2 with lead concentrations exceeding the RRG is estimated to be approximately 10.3 cubic yards (an estimated 15.5 tons). This volume was calculated as



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ERM, INC.

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follows: the mound of soil/material comprising Debris Pile #2 measured approximately 12 feet long by 9 feet wide by 1.5 feet thick. A volume for the entire pile was calculated using these dimensions. In addition, it was assumed that the removal would extend to an approximate depth of 0.5 foot within the native soil beneath Debris Pile # 2, as well as within the area bounded by the clean surface soil sample locations (DP2-2 through DP2-5). The sum of the volume for the soil/material in Debris Pile #2 and the volume of native soil to be removed from beneath and around Debris Pile #2 was calculated to provide the overall volume of material to be removed from the Debris Pile #2 area. The tonnage was estimated utilizing an approximated bulk density of 1.5 tons/cubic yard.

2.0 SCOPE OF WORK

The Scope of Work for this removal program is based on the Order, which stipulates that soil/material exhibiting total lead concentrations exceeding 1,000 mg/Kg will be removed and treated or disposed off-site. The scope of work involves the removal of a total of approximately 139.5 cubic yards of soil/material from the two Debris Pile areas with disposal at a suitable off-site facility. The soil/material removed is expected to contain total lead concentrations exceeding 1,000 mg/Kg.

2.1 EXTENT OF SOIL REMOVAL

Based on the results of the field sampling program, the removal areas (Debris Piles #1 and #2) have been defined as shown on **Figure 3.** The area to be removed from Debris Pile #1 is generally flat (approximately one foot thick or less), but rises to an approximately 2.5-foot high mound at its western end. The removal of soil/material in Debris Pile #1 is expected to extend through the entire thickness of the pile to approximately 0.5 foot within native soil. The removal of soil/material from Debris Pile #2 will include the entire mound of material comprising the pile, and will extend to an approximate depth of 0.5 foot within the native soil beneath the pile and in the highlighted area surrounding Debris Pile #2 (Figure 3). Confirmational soil samples will be collected and analyzed during removal activities to ensure that no soil/material with total lead concentrations exceeding the RRG remains on-site following the removal. The decision to perform any additional removal in either area will be based on the results of the confirmation sampling and analysis, as well as EPA approval.

During removal activities, the excavated soil/material will be stored temporarily in lined roll-off containers for staging prior to final transportation and disposal. **As shown on Figure 3, a small portion of Debris Pile #1 is covered with small vegetation (i.e., weeds, small bushes, and saplings). This aboveground vegetation will be cut and transferred to areas where it will not hinder the removal operations at the Site. Any roots or vegetation close to the ground surface or above the bottom of the excavation (approximately 0.5 foot within the native soils below the piles) will be removed and disposed of with the soil having lead concentrations exceeding the RRG.**

2.2 DISPOSAL OPTIONS

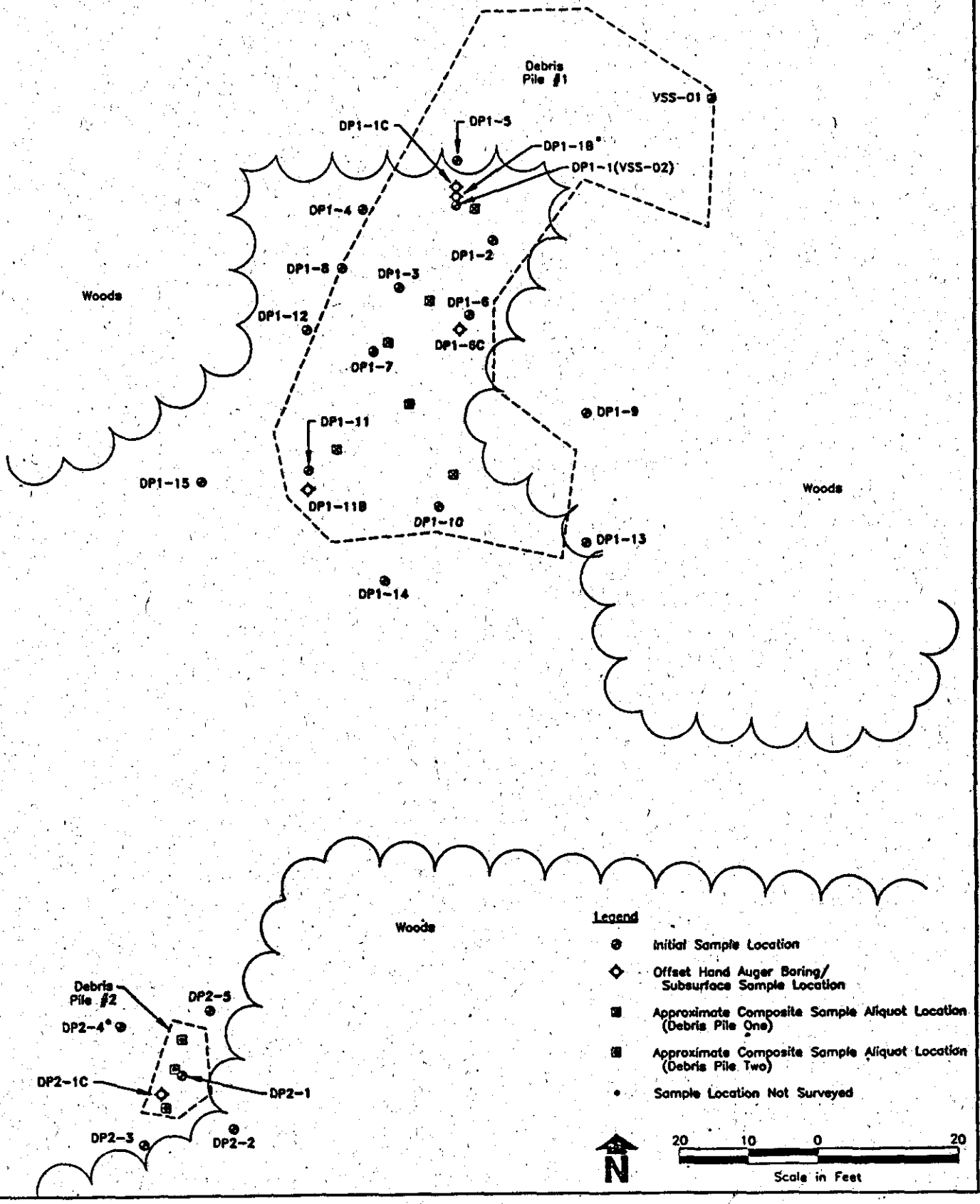
On 11 August 1995, ERM personnel collected two composite soil samples (CS-DP1 and CS-DP2) from the debris piles for analysis for arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver by the toxicity characteristic leaching procedure (TCLP). The approximate location of the composite sample aliquots are presented on Figure 4. Each of the aliquots were obtained by advancing a hand auger to a depth of 0.5 to 1.0 foot at each aliquot location. The material from each station was transferred to a stainless steel bowl and thoroughly homogenized. The composite sample to be submitted for laboratory analysis was obtained from the material in the stainless steel bowl. This compositing procedure was conducted for each Debris Pile with the hand auger and stainless steel bowl being thoroughly decontaminated between composite samples.

Sample CS-DP1 was a composite of six (6) aliquots of soil/material collected from the area exhibiting total lead concentrations in excess of the Removal Response Goal of 1,000 mg/KG in Debris Pile #1. Sample CS-DP2 was composited from three (3) aliquots of soil/material collected from Debris Pile #2. Sample collection procedures, preservation, and transport were conducted in accordance with the standard protocols described in the USEPA-approved Response Action Plan (RAP) dated 1 March 1995. The samples were shipped via Federal Express Priority Overnight delivery to Gulf States Analytical Services, Inc. in Houston, Texas for analysis.

On 16 August 1995, ERM received the laboratory analytical results for composite samples CS-DP1 and CS-DP2. The samples did not exhibit any leachable concentrations of arsenic, barium, cadmium, chromium, lead, mercury, selenium, or silver above the regulatory levels, A copy of the laboratory analytical report is included as Appendix C.

The soil/material removed from the designated areas will be disposed off-site at permitted facilities. Based on the TCLP results from the two composite samples, it appears that the soil/material can be disposed of at a permitted non-hazardous waste facility. However, as discussed below, these facilities will likely require additional analytical data and generator information prior to their acceptance of the soil/material (for further detail, see Section 5.0). As such, ERM personnel, on behalf of the Respondent, will initiate discussions with the non-hazardous facilities first in order to evaluate the additional characterization requirements and permit status of each of the facilities. Should the non-hazardous waste facilities not be able to accept the material, ERM would then explore the disposal options with the hazardous waste facilities.

Figure 4
Composite Sample Aliquot Locations
Virginia Scrap Iron & Metal Company
Roanoke Avenue Site
Roanoke, Virginia



Regardless of the selected facility, the Respondent will submit the qualifications of the selected disposal facility and the results of any additional waste characterization analyses to the USEPA for approval pursuant to Paragraph 8.2 of the Order.

The facilities contacted will include but not be limited to the following:

Non-Hazardous Waste Facilities

Chambers, Amelia, Virginia

HAM, Peterstown, West Virginia

Hazardous Waste Facilities

Laidlaw Environmental Services, Pinewood, South Carolina

Heritage Environmental Services, Charlotte, North Carolina

In addition to the soil/material requiring proper disposition, provisions will be made to characterize and properly dispose of the decontamination water, personal protective equipment (PPE), and any other wastes generated during the delineation phase or removal phase of the project. It is assumed that the PPE and any other solid waste (i.e., plastic sheeting, etc.) will be disposed of in the same facility as the soil/material. However, the decontamination water will be characterized for possible disposition in the City of Roanoke's sanitary sewer system. However, should the levels of constituents exceed the City's discharge limits, ERM will coordinate the disposal of the decontamination water through an off-site disposal facility. The Respondent will provide written notification and the results of the characterization analysis to the USEPA following the final selection of a disposal facility.

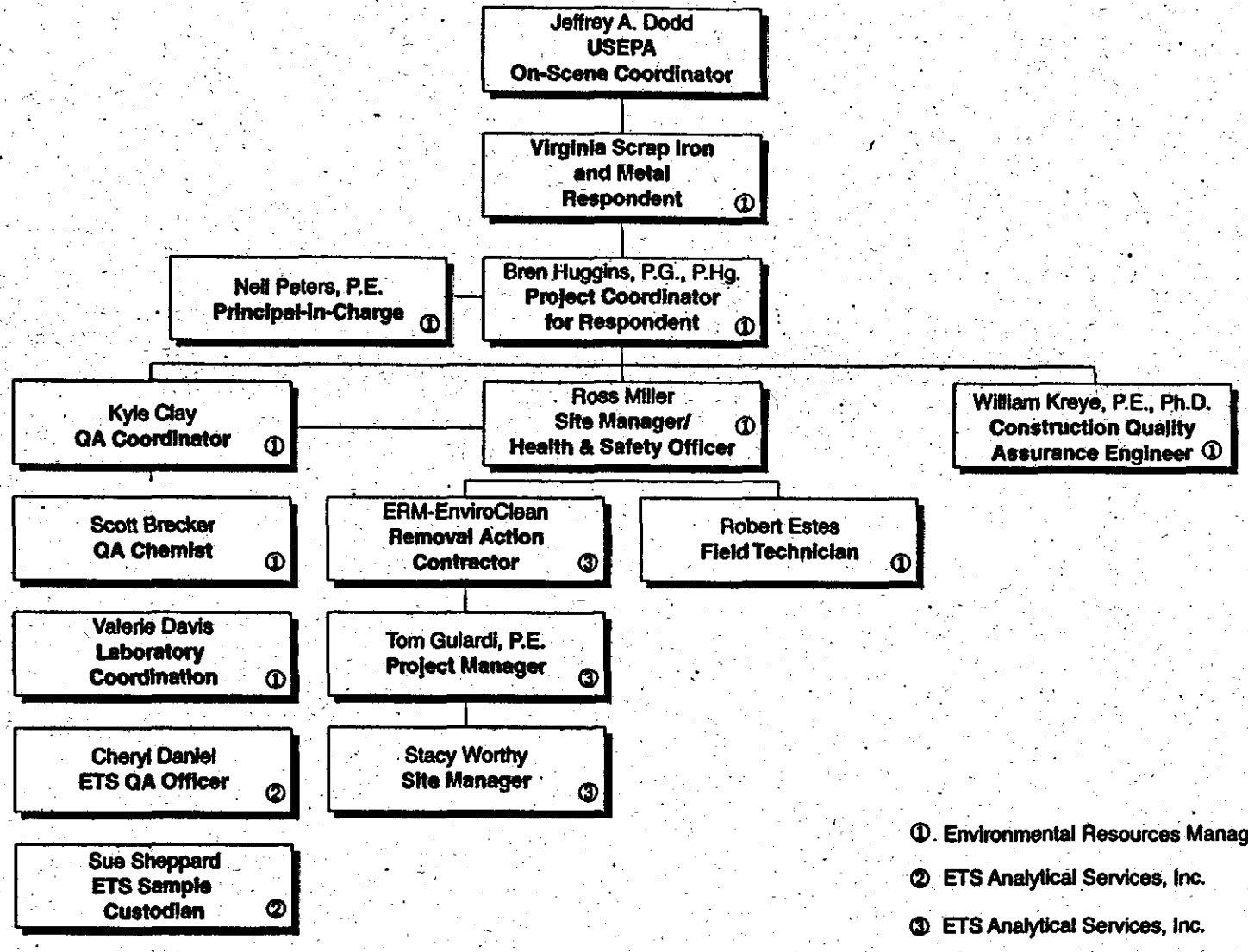
3.0 EXECUTION PLAN

The Execution of the Scope of Work for the removal program will be accomplished by a project team consisting of the Respondent, the Removal Design Engineer (Engineer), and a Removal Action Contractor (RAC). The organization of the project team is provided in Figure 5.

ERM EnviroClean (ERM) will provide services as the Engineer and RAC for this removal program. ERM will be responsible and/or take part in the following activities:

- Preparation of the RAP, including the Supplemental Plan;
- Procurement of all necessary local construction permits;
- Procurement of Erosion and Sedimentation (E&S) control permit from the City of Roanoke;
- Preparation and implementation of a site-specific Health and Safety Plan for his/her employees;
- Carrying out the scope of work described in this plan and specifications;
- Observation of Removal Action activities at the Site for compliance with all necessary plans;
- Field sampling, analysis, data evaluation;
- Preparation of status reports;
- Finalizing selection of the disposal facility;
- Making arrangements with selected disposal facilities for disposal of soil/material; and
- Manifesting for wastes leaving the Site; and
- Preparation and submittal of the final Closure Report.

Figure 5
Project Organization Chart



4.0 GENERAL REQUIREMENTS

The following General Requirements are necessary to complete the Scope of Work for the removal program at the Site.

4.1 SITE STAFFING

ERM will assign a Site Manager (SM) to implement the scope of work. In addition, ERM will have additional qualified staff who will assure complete and proper implementation of the scope of work, and all procedures and precautions specified in the Health and Safety Plan. ERM will also designate a Site Safety Officer (SSO).

4.2 HEALTH AND SAFETY PROGRAM

During the soil/material removal and site restoration work, health and safety requirements as per 29 CFR Parts 1910.120, 1910.20, 1920.1000, 1926, and 1904 must be followed by all personnel present at the Site. The Health and Safety Plan (HASP) included as Appendix A of this SRP outlines the minimum health and safety requirements for the work. ERM will assure that all personnel entering the Site have had all appropriate health and safety training required by the Occupational Safety and Health Administration (OSHA) and USEPA, and that all requirements of the HASP are implemented.

4.3 SITE PREPARATION

4.3.1 *Permits and Approvals*

Prior to beginning the project, ERM will obtain all of the necessary local, state, and federal permits and approvals needed to conduct the activities described in the Scope of Work.

These permits should include (but are not limited to) the following:

- local construction permit;
- fire department permit;
- inform local police of heavy truck traffic, and obtain approval for equipment on local traffic routes; and

- waste disposal approvals from disposal facilities (contingent upon waste characterization).

In addition, ERM will submit necessary plans to the City of Roanoke Engineering Office for procuring the Erosion and Sedimentation Control (E&S) permit required for implementing the Scope of Work. ERM has met with the City Engineer in the past to discuss the requirements for such a permit.

4.3.2 *Mobilization*

ERM will mobilize all necessary equipment to the site prior to commencing the work. All mobilized vehicles and equipment may be parked/staged on the Site along the gravel driveway leading to the area of concern (Figure 2).

4.3.3 *Site Delineation*

Work zones will be established in accordance with the Scope of Work provided in Section 2.0 of this SRP. The zones will be established prior to the commencement of soil removal activities. The purpose of the work zones is to provide a method of reducing the potential for transfer of contamination beyond its present boundaries. Within these zones, prescribed operations will occur utilizing appropriate Personal Protective Equipment (PPE). The SSO will oversee proper implementation of these work zones. All of the delineated zones will be marked with the safety signs and fences as described in Section 4.5 of this Work Plan. The zones to be delineated are as follows:

4.3.3.1 *Exclusion Zones*

The Scope of Work involves the removal of soil/material from two discrete removal areas (Debris Piles #1 and #2). Each of these material removal/work locations will be considered an exclusion zone. Within these zones, prescribed levels of personal protection must be worn by any entering personnel. For this work, a minimum of personal protection, as determined by the HASP, will be required as long as the workers remain within the removal areas.

4.3.3.2 *Contamination Reduction Zone*

The contamination reduction zone will be located between the exclusion zones and the support zone. The purpose of this zone is to provide an area to prevent the transfer of contaminants to clean areas of the site from the exclusion zones by contact with personnel or hand-held equipment

that have been within the exclusion zones. All personnel decontamination activities will occur within this area. The heavy equipment used in the removal program will be decontaminated at the end of the removal activities at a decontamination station. The details of equipment decontamination are provided in Section 7.0 of this SRP. One common contamination reduction zone will be located between the two exclusion zones established for the soil removal.

4.3.3.3 *Support Zone*

A temporary control station will be set up at the end of the gravel driveway leading to the area of concern. This area will be used to support the remediation activities, to maintain work records, and as a central communication center. The control station and all other areas on the Site outside of the soil removal areas are "clean" areas; as such, only clean, decontaminated, or properly containerized materials, equipment, and supplies can be stored in these areas.

4.3.4 *Erosion Control*

ERM will procure the E&S permit from the City of Roanoke Engineering Office. ERM will follow the general E&S procedures provided in Section 10.0 of this SRP.

4.3.5 *Dust Control*

In the event of dry, dusty conditions during removal activities, appropriate dust control measures will be implemented during soil/material removal and other construction/equipment movement activities. The dust control measures will include fine mist spray to moisten dry soil/material.

4.3.6 *Access to Soil Removal/Work Locations*

Access to the areas of soil removal can be gained by driving to the northernmost portion of the property from the entry gate located at the southern end of the Site. The soil removal areas are easily accessible with adequate work space for maneuvering construction equipment.

4.3.7 *Installation/Provision of Utilities*

The following is a list of utilities and the status of their availability:

- Electricity - There is no electrical power supply near the removal areas. ERM shall supply an electrical generator capable of providing

for all of the electrical need of any electrical equipment that is necessary to complete the Scope of Work;

- Water Supply - There is no available water supply near the removal areas. ERM will make arrangements to provide any water needed during removal activities.
- Trash Disposal - ERM will make arrangements to contain and dispose of all non-hazardous domestic debris, trash, refuse, garbage, etc. generated during soil removal;
- Communication facilities - ERM will provide a portable telephone for use at the Site during removal activities.

ERM will make arrangements regarding any additional utilities wherever necessary.

4.4 *REMOVAL EQUIPMENT DECONTAMINATION*

All PPE and personnel decontamination will be performed in accordance with the HASP. Other equipment used during the removal and restoration program that comes into contact with the contaminated soil areas will be decontaminated prior to leaving the exclusion zones. The only pieces of equipment that should come into contact with contaminated soil/material will be the removal and loading machinery used to remove and store/stockpile the contaminated soil/material. The removal equipment decontamination plan is provided in Section 7.0 of this SRP. ERM will follow appropriate decontamination procedures which would at a minimum meet the requirements provided in Section 7.0.

4.5 *WARNING SIGNS, FENCING AND MARKING TAPES*

ERM will furnish and install all components of the warning signs, fencing, and marking tapes necessary to demarcate the soil removal work areas, and to be in compliance with OSHA Regulation 1910.145 "Specifications for Accident Prevention Signs and Tags." At a minimum, the removal areas should be surrounded by plastic, high visibility fencing that is four-feet high and supported by steel posts. A detailed site security plan which addresses these issues is provided in Section 8.0 of this SRP.

4.6 *MANIFESTING WASTES*

All waste materials resulting from removal actions that leave the Site will be properly manifested per the Department of Transportation regulations

in No. 49 Code of Federal Regulations. ERM will supply all of the applicable paperwork, already filled out (neatly typed), ready for signature. An authorized Respondent signatory agent will be on-site to sign the manifests. **Based on TCLP results obtained from the composite samples from the two debris piles (see Section 2.2), an EPA ID# for the shipment of characteristically hazardous soil/material from the Site does not appear to be necessary. As currently envisioned, all material removed from the Site will be manifested as a non-hazardous waste; however, additional analyses will likely be required by the selected disposal facility prior to final approval and transportation of the material from the Site. As stated in Section 2.2, the Respondent will provide the qualifications and any additional analytical procedures requested by the selected disposal facility to the EPA for approval prior to the implementation of the SRP.**

5.0 SOIL/MATERIAL REMOVAL PLAN

5.1 PURPOSE AND CONTENT

A Removal Action is to be implemented at the Virginia Scrap Iron and Metal Company Roanoke Avenue Site (Site) pursuant to the Administrative Order by Consent (Order) Docket No. III-95-09-DC. As stated in the Scope of Work, the Order stipulates the removal/disposal of soils/material with total lead concentrations in excess of the RRG of 1,000 mg/Kg. The horizontal and vertical extent of such material has been delineated based on a field sampling and analysis program. The soil/material will be removed from the two designated areas as shown on Figure 3 and disposed off-site at suitable permitted facilities. This plan outlines the procedures for the removal of the soil/material.

5.2 PHYSICAL CHARACTERISTICS OF REMOVAL AREAS

The majority of the soil/material to be removed is present above grade in the form of two debris piles on top of native soils. Debris Pile #1 consists of gray soil with metal machine parts, glass fragments, pieces of plastic and rubber, concrete and terra-cotta pipes, and pieces of sheet metal. This pile is generally flat (approximately one foot thick or less), but rises to an approximately 2.5-foot high mound at its western end. Debris Pile #2 consists of reddish-brown soil with metal fragments and glass. The pile is approximately twelve feet long, nine feet wide, and 1.5 feet high.

5.3 SOIL/MATERIAL REMOVAL

As noted previously, removal of soil/material in Debris Pile #1 is expected to extend through the entire thickness of the pile to approximately 0.5 foot within native soil. The removal of soil/material from Debris Pile #2 will include the entire mound of material comprising the pile, and will extend to an approximate depth of 0.5 foot within the native soil beneath the pile and in the highlighted area surrounding Debris Pile #2 (Figure 3).

The soil/material from the designated areas will be removed using appropriate equipment and procedures as described below. It is expected that a tire-mounted backhoe will be used to remove the soil/material. Because the size of the piles are relatively small, it is likely that the

excavating equipment can be situated in an area not impacted by lead concentrations above the RRG during the removal activities.

Following the completion of the additional waste characterization, the excavated soil/material will be loaded directly into dump trailers for transportation to the approved disposal facility.

5.4 *DISPOSAL OF SOIL/MATERIAL*

The soil/material removed from the designated areas will be hauled to an off-site permitted facility. The ultimate disposal of the soil/material will be based on results of the waste characterization. As stated previously, based on the results of the TCLP analysis, it appears that the soil/material can be disposed of at a permitted non-hazardous waste facility. However, additional samples will be obtained and analyzed as required by the selected disposal facility prior to excavation and transportation of any of the material from the Site. One composite sample will be collected from each Debris Pile and submitted for laboratory analysis. The same locations used to collect the TCLP composite sample aliquots will be used to collect the additional waste characterization composite samples.

ERM will arrange for the transportation of the soil/material, including loading, and will make all necessary arrangements with selected disposal facilities. The Respondent will select the disposal facilities. The Respondent will notify USEPA in writing regarding the selected disposal facility or facilities and will also provide facility qualifications to the USEPA for approval pursuant to Paragraph 8.2 of the Order.

ERM will follow applicable Federal, State and Local regulations for transporting the contaminated soil/material. The Respondent-designated representative will be available on-site for signing manifest sheets.

6.0 CONFIRMATION SAMPLING AND ANALYSIS PLAN

6.1 PURPOSE AND CONTENT

This plan has been prepared for implementing verification sampling and analysis for the confirmation of removal of soil/material with lead concentrations exceeding 1,000 mg/Kg.

6.2 SOIL/MATERIAL REMOVAL SAMPLING

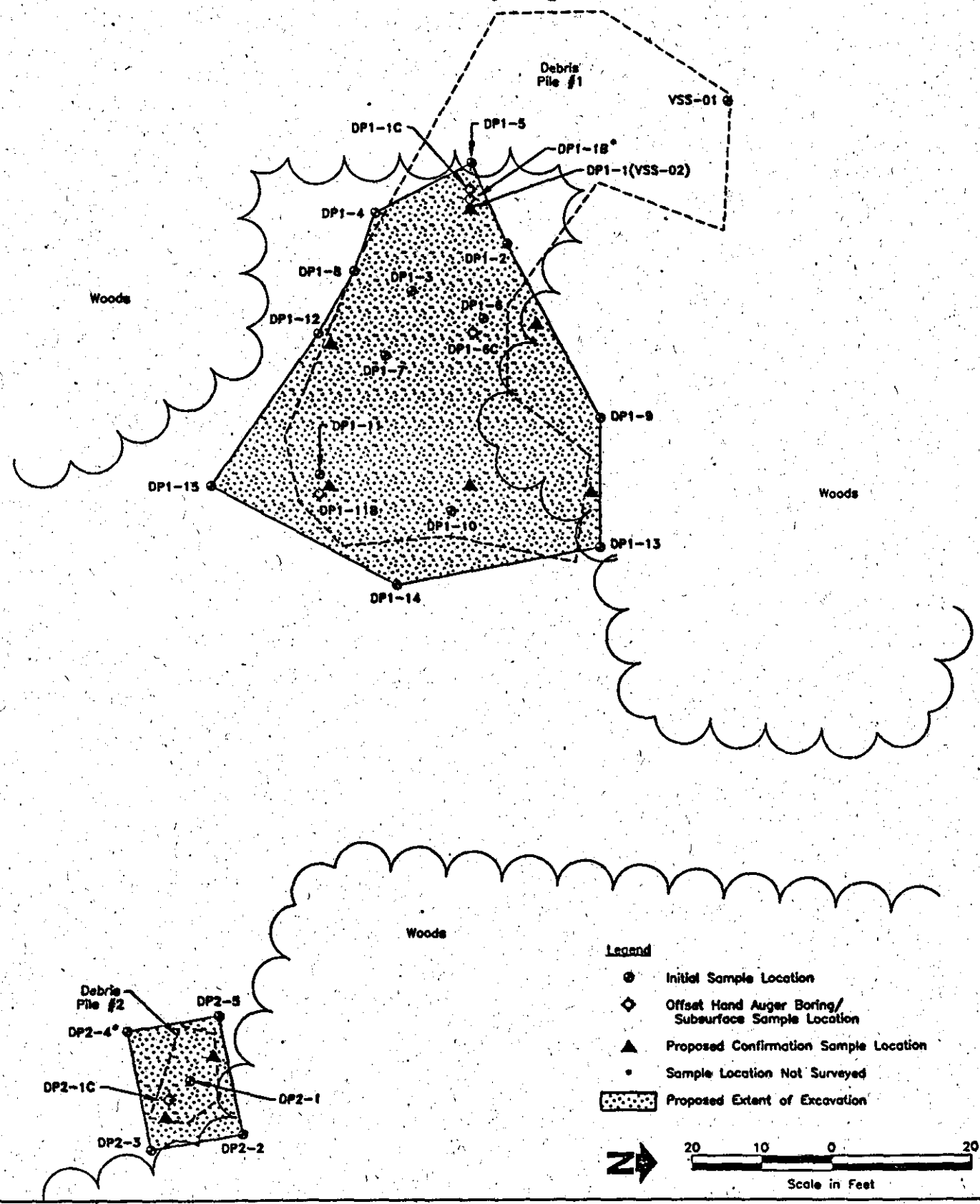
Following the removal of the soil/material from the designated areas, confirmation samples will be collected from the floors of the excavations. **The proposed confirmation sample locations are presented on Figure 6. Actual locations will be determined in the field based on Site conditions at the time of excavation.** It is estimated that approximately six (6) samples will be collected from the floor of the excavation of Debris Pile #1. These samples will be located based on a 20 foot by 20 foot grid starting at the former location of USEPA-TAT sample VSS-02. It is estimated that approximately two (2) samples will be collected from the floor of the excavation of Debris Pile #2.

6.3 SAMPLE COLLECTION AND ANALYSIS

Soil sample collection will follow the standard protocols described in the previous Field Sampling Plan for the Site, which was included as part of the Quality Assurance Project Plan (QAPP) in the USEPA approved RAP dated 1 March 1995. The sampling procedures and QA/QC requirements for the confirmational sampling will be the same as those specified in the QAPP.

The soil samples will be analyzed for total lead. **In order not to impede the removal process, the shortest turnaround time will be requested from the laboratory.** The analysis will be performed in accordance with standard procedures in accordance with USEPA SW-846 protocols. The analysis will be performed by a CLP certified laboratory.

Figure 6
Proposed Confirmation Sample Locations
Virginia Scrap Iron & Metal Company
Roanoke Avenue Site
Roanoke, Virginia



6.4 *ADDITIONAL SOIL REMOVAL*

If confirmation soil samples from the floors of the excavations exhibit lead concentrations exceeding the RRG, then an additional 1 foot of soil will be excavated from the areas exceeding the RRG, and additional confirmation soil samples will be collected. This process will continue until confirmation sampling indicates that lead concentrations are below the RRG, or ground water is encountered, whichever comes first. The USEPA **On-Scene Coordinator (OSC)** will be contacted to discuss the future course of action if media at the interface of the ground water shows lead levels in excess of the RRG.

7.0 EQUIPMENT DECONTAMINATION PLAN

7.1 PURPOSE AND CONTENT

This plan describes the general procedures to be performed for decontamination of equipment used in the soil/material removal upon substantial completion of removal activities and prior to demobilizing any equipment from the site. The decontamination procedure will apply to all equipment used in the removal activities. The decontamination of Personnel and PPE will be performed in accordance with the HASP. The procedures provided in this plan are the minimum requirements for implementing the decontamination procedures. It should be noted that most of the removal activity is confined to two small designated areas. The removal equipment can be positioned in non-contaminated areas for removal of soil above the RRG. For this reason, the decontamination of removal equipment is expected to be minimal.

The personnel decontamination procedures are described in the Health and Safety Plan.

7.2 DECONTAMINATION PROCEDURES

As noted above, because only the bucket of the removal equipment should come into contact with the soil/material which exceeds the RRG, the decontamination of removal equipment is expected to be minimal. As such, the procedures for decontamination of equipment will include dry brushing of the equipment at each of the removal areas or staging area. This brushing will be accomplished using metal brushes or suitable brooming equipment. However, the bucket of the excavation equipment will be thoroughly decontaminated using a high-pressure wash or steam cleaner to further remove any soil/material adhering to the bucket. The decontamination water will be contained in a metal trough or other suitable container and pumped into a 55-gallon drum for proper characterization and disposal. If possible, based on the characterization results, ERM will coordinate the disposition of the decontamination water through the City of Roanoke's sanitary sewer. However, should the levels of constituents exceed the City's discharge limits, ERM will coordinate the disposal of the decontamination water through a disposal facility. The Respondent will provide written notification to the USEPA of the final selection of the disposal facility.

The removal equipment will be placed on a plastic tarp or liner for performing the brushing down of the soil/material particles. The soil/material particles resulting from the brushing procedures will be disposed along with soil/material from the removal process.

The confirmation of decontamination of the portion of the excavating equipment that has not contacted the material to be excavated will be based on visual inspection to ensure that all soil particles have been removed from the equipment. One confirmation sample (i.e., equipment blank) will be collected and submitted for laboratory analysis for total lead following the decontamination of the bucket.

8.0 SITE SECURITY PLAN

8.1 PURPOSE AND CONTENT

The purpose of the Site Security Plan (SSP) is to establish procedures and define responsibilities for controlling access to the site during the removal action. The SSP will prevent unauthorized access to the work areas. Site security will be achieved through a combination of organizational measures and physical site controls.

8.2 SITE SECURITY ORGANIZATION

The individual primarily responsible for day to day site security will be the Site Manager (SM) designated by ERM. The SM will be responsible for the enforcement of site security and the maintenance of physical site security controls (i.e., flagging, signage, etc.). The SM will delegate responsibilities providing support as needed to implement and enforce the SSP. All authorized personnel are responsible for assisting the SM in implementing and enforcing site security.

8.3 LINES OF COMMUNICATION

The SM will be responsible for ensuring that all individuals present at the site are familiar with all aspects and requirements of the SSP. All concerns of on-site personnel regarding site security shall be brought to the attention of the SM for resolution.

8.4 AUTHORIZED PERSONNEL

The SM is responsible for designating authorized personnel relative to access to removal areas and shall provide and update this information, as necessary, to the USEPA and to the Respondent. In general, authorized access will be limited to those individuals whose presence at the Site is required in order to conduct the work, including some personnel not directly involved in the work (i.e., agency personnel and/or their designated representative, representatives of Respondent).

At present, it is envisioned that the authorized personnel will include, but not be limited to:

1. ERM Personnel
2. Agency Personnel
3. Respondent Representatives
4. Transporter and Disposal Company Personnel

8.5 *NON-AUTHORIZED PERSONNEL*

Non-authorized personnel, including representatives of other government agencies, seeking access to the removal areas will be directed to the SM for consideration of access. Access permission will be granted on a case by case basis, taking into account safety and the need for access. For safety consideration such access, if granted, may be restricted to limited areas within the Site. All non-authorized personnel must be accompanied by the SM or a designee of the SM.

8.6 *ENFORCEMENT OF SITE SECURITY*

All violations of site security shall be brought to the attention of the SM by authorized personnel. The SM will be responsible for stopping the violation and taking measures to prevent its recurrence. The SM will document all violations. If necessary, the City of Roanoke Police Department will be requested to help enforce site security measures. The SM will determine whether the involvement of law enforcement personnel is necessary.

8.7 *PHYSICAL SITE SECURITY*

8.7.1 *Site Entry/Exit Procedures*

All authorized personnel will be required to inform the on-site SM or his/her delegate when they enter or exit the site so that a current record of site access is maintained. A daily sign-in/sign-out sheet may be used to document the time of entry and exit, the purpose of the visit, the location(s) visited within the Site, and the personnel contacted. All entrances to the work areas will be controlled through the support zone.

8.7.2 *Location of Entry/Exit Points*

Unless otherwise directed, all personnel shall use the established entrance/exit at the southern end of the facility. The SM will be responsible for establishing any internal entry/exit points and routes as needed to ensure control of site security.

8.7.3 *Signage and Flagging*

Appropriate signs will be posted along all the boundaries of the site at measured intervals. The signs will be posted in areas affected by the SRP and at all points of vehicular access. The signs will state "Danger- Authorized Personnel Only" or similar verbiage. The SM will be responsible for evaluating whether additional signage may be needed at other locations on the site prior to any subsequent field activities.

Portions of the property not affected by the RAP are currently occupied or used by tenants. All tenants will be allowed to continue normal operations during the implementation of removal activities but will not be allowed within the exclusion zones.

To allow the property tenants to be accommodated as described above, additional site security measures will be taken. These are:

1. Plastic barricade tape which reads "Caution Hazardous Materials" or similar verbiage will be placed along the gravel driveway between the exclusion zones and the rest of the property.
2. All personnel and employees of the tenants will be informed of the activities which will occur, the potential hazards of these activities, and the locations and times of restricted access to areas on the site.

8.8 *COMMUNICATION*

Both internal and external communication systems will be maintained on-site. For internal communications, a noisemaker (megaphone or compressed air horn) and visual signals (previously agreed to and discussed in the morning safety meeting) will be used. Where equipment noise and PPE may impede audio signals, radios, certified as intrinsically safe for the situation of intended use, will be used. For external communications, a portable telephone will be available in the support zone.

8.9 *EMERGENCY SECURITY PROCEDURES*

Access by emergency personnel (i.e., fire, rescue, etc.) may be required during the course of this RAP. The SM will be responsible for informing the local emergency personnel of the nature of the remedial work being performed, the pertinent site security measures, particularly in relation to site access and the required safety measures and procedures. The SM is also responsible for documenting site visits by any emergency personnel.

9.0 SITE RESTORATION PLAN

9.1 PURPOSE AND CONTENT

This plan describes the Site Restoration activities that will be completed after the removal of soil/material containing lead in excess of the RRG. Site Restoration activities typically include regrading to match original grades, revegetation or other activities to restore the site after significant excavation of areas, or construction, or if the native surfaces are exposed after the completion of remediation activities.

9.2 SITE RESTORATION

The majority of the soil/material to be removed is from two debris piles on the ground surface. However, some of the native soil beneath the debris piles will also be removed. Following the removal of the soil/material, the areas will be regraded to match the surrounding areas. Grass seed will be placed on the backfilled areas following the completion of the removal activities.

10.0 EROSION AND SEDIMENTATION CONTROL PLAN

10.1 PURPOSE AND CONTENT

The purpose of the Erosion and Sedimentation (E&S) control measures for this project is to minimize the migration of contaminated soil/material particles to non-contaminated areas during the removal program. This plan describes the necessary E&S controls that are proposed as a part of the soil removal program. Typically, detailed E&S plans are necessary for earth moving activities where large areas are exposed to rainfall and surface run-off, or alterations to the surface water run-off patterns are made by removing the vegetation and altering the grades and topography. However, in this case, the removal activities will only minimally expose the native surface or soils, and will not change the topography or the grades. Furthermore, the actual removal activities are not expected to last more than two to three days, and the activities once started will continue until completion.

ERM personnel will discuss the nature and extent of the removal program and requirements of the E&S controls with the City of Roanoke Engineering Department. The City of Roanoke Engineering Department has jurisdiction for issuing E&S permits for all earth disturbing work in the area where this Site is located. Based on our past experience, it is likely that plans probably will not be necessary for this activity. ERM will submit to the City Engineering Department an application for an E&S permit along with an explanation of the proposed activity, site map showing the removal areas, temporary stockpiling areas, and E&S control measures that would be implemented during the proposed activity.

10.2 PROPOSED CONSTRUCTION ACTIVITIES

The soil removal activities are limited to the two debris piles within the area of concern. During removal of the debris piles, some of the native soil beneath the piles will also be removed. It is anticipated that excavation into the underlying native soil will only be within the upper 0.5 foot of the native soil. The soil/material removed from these areas will be placed in lined roll-off containers for staging prior to final transportation and disposal.

10.3 *EROSION AND SEDIMENTATION CONTROL MEASURES*

A combination of silt fence, straw bale sediment barriers and temporary berms will be used as E&S control measures. Silt fences will be installed along the western, northern and eastern boundaries of the area of concern to prevent migration of sediment toward the Roanoke River from the debris piles. The silt fences will be constructed in accordance with the specifications provided in the Virginia State Erosion and Sedimentation Control Handbook, 1992 (STD.SPEC 3.05). Equivalent prefabricated silt fences may also be used. Although the entire area is relatively flat, the surface water run-off is generally to the north toward the Roanoke River. The proposed silt fence will effectively control the migration of soil/material if it should take place.

Temporary diversion berms will be constructed on the upgradient side of the removal areas if precipitation or rainfall is expected at any time during the removal activities. The temporary diversion berms will divert the surface run-off from removal areas. The temporary diversion berms will be constructed using either sand bags or earthen material. The size and extent of the diversion berm will be determined by the field engineer based on the specific site conditions such as the expected type and duration of rainfall.

10.4 *REVEGETATION*

The excavated areas will be backfilled with clean soil and seeded with grass at the conclusion of the removal activities.

11.0 CONSTRUCTION QUALITY ASSURANCE PLAN

11.1 PURPOSE AND CONTENT

The Construction Quality Assurance Plan (CQA) Plan will be used in monitoring and documenting the quality of materials used and the construction practices employed in their placement. It is the intention of the CQA Plan to establish procedures by which the soil/material removal will be successfully implemented and to establish the roles and responsibilities for ensuring successful implementation of the removal program at the Site.

Included in the CQA Plan are the submittals, approvals, inspections, observations, testing, and documentation required during pre-construction, construction, and post-construction periods. The general scope of the CQA activities include the following:

- Pre-Construction CQA Requirements
  - Inspect the fence for gaps or missing sections that will require repair;
  - Review the scope of work, plans, specifications, and scheduling;
  - Review the logistical approach to the removal operations, fence repair, decontamination and health and safety; and
  - Review shop drawing submittals made in accordance with the Remedial Action Technical Specifications.
- Construction CQA Requirements
  - Observe conformance with requirements provided in the Remedial Action Design documents; and
  - Daily inspection reports and photographs.

- Post-Construction CQA Requirements
  - Final inspection; and
  - Final documentation report.

11.2 *QUALIFICATIONS, AUTHORITY AND RESPONSIBILITY*

11.2.1 *Qualifications*

The Engineer to be engaged by Respondent will be a Professional Registered civil or geotechnical engineer in the Commonwealth of Virginia, with sufficient practical, technical and managerial experience to successfully oversee and implement CQA activities for the remediation of the Site. **As currently envisioned, Dr. William Kreye will serve as the CQA Engineer for this project.** The Engineer will ensure all CQA related matters are communicated to, and acted upon, by the affected organization(s). The ultimate responsibility for assuring the quality of construction tasks and for certifying site remediation will remain with the Engineer.

Any CQA inspector(s) working under the auspices of the Engineer will possess adequate formal training and sufficient practical, technical, and administrative experience to execute and record inspection activities successfully. This includes demonstrated knowledge of specific field practices relating to construction techniques used for the remediation, all codes, regulations, and project specifications concerning materials, earthwork activities, observation and testing procedures, equipment, documentation procedures, and site safety. The CQA inspector(s) will report directly to the Engineer.

The Engineer or his/her inspector(s) will remain on-site at all times during construction to oversee CQA activities in order to assure adherence to the requirements specified herein as well as the requirements contained in the Removal Action Plan.

11.2.2 *Authority*

The Engineer will report to the Respondent and will serve as the liaison between the Respondent and the USEPA. The Engineer will also report on quality issues to USEPA and perform liaison functions with USEPA's contractor and other regulatory personnel.

11.2.3 *Responsibilities*

The Engineer is singularly responsible for all aspects of executing the CQA Program. The Engineer will train the inspector(s) and direct, oversee, and check his (their) work. The CQA inspector(s) will conduct the daily on-site observations and record keeping. The major areas of responsibilities include:

- Responsibility for interpreting and clarifying drawings and specifications.
- Complete daily inspection reports which will provide a chronological framework of the project. At a minimum they will include the following:
  - Date and project name;
  - Weather conditions;
  - Locations of work
  - Equipment and personnel used;
  - Description of work performed;
  - Decisions made regarding acceptance of portions of work, and/or remedial action to be taken in instances of substandard quality;
  - Record project photographs; and
  - Signature of inspector.
- Confirm that the personnel and procedures do not change over time or that any changes do not result in a deterioration of the inspection process.
- Provide to Respondent reports on the inspection results including:
  - Review and interpretations of observation records and test results;
  - Identification of work that the Engineer believes should be accepted, rejected, or that may require further testing or inspection for approval; and
  - Reports that reject defective work and specify corrective measures.

- Verify that the equipment used in site operations monitoring (Health and Safety and Air Particulate Monitoring) meets the test requirements, and that the tests are conducted by qualified personnel according to the standardized procedures specified.

- Monitor all tests conducted as required by the contract design specification.

- Perform independent on-site inspection of the work in progress to assess compliance with the design criteria, plans, and specification.

- Accept or reject units of work.

- Prepare the final CQA report. The objective of the CQA report is to provide a permanent record of the construction to assure to regulatory agencies that the Site was remediated in accordance with the design specification, and regulatory requirements.

- The Site Representatives for the Engineer will be designated prior to the initiation of the removal program.

11.3 *PROJECT MEETINGS*

11.3.1 *Pre-Construction Meeting*

In order to successfully complete this project, it will be necessary for the equipment operator and the Engineer to communicate regularly. This will be accomplished through a pre-construction meeting which will be held at the Site. Representatives of the USEPA will be invited to attend the meeting. The purpose of the pre-construction meeting is to:

- Review the responsibilities of each party;

- Discuss the established protocol for observations, testing and health and safety;

- Discuss the established protocol for handling construction deficiencies, repairs, and retesting;

- Review methods for documenting and reporting inspection data;

- Review methods for distributing and storing documents and reports;

- Discuss any modification of the CQA Plan to ensure that site-specific considerations are addressed;

- Discuss procedures for the prevention of damage from inclement weather or other events; and

- Conduct a site walk-around to verify that the design criteria, plans, and specifications are understood and to review material and equipment storage locations.

The meeting will be documented by a designated person and minutes will be transmitted to all parties.

11.3.2 *Progress Meetings*

Since the nature and size of the removal program is small and the time period of the removal program may be short, there may not be planned progress meetings. However, a progress meeting will be held at mid-project. The first progress meeting scheduled may be one day from the pre-construction meeting. The purpose of the meeting is to:

- Review the previous period's activities and accomplishments;

- Review the work location and activities;

- Identify the operators and equipment assignments; and

- Discuss any potential construction problems.

All progress meetings will be documented by the Engineer and minutes will be transmitted to all parties.

Additional meetings will be scheduled if there are significant schedule delays.

11.3.3 *Problem or Work Deficiency Meetings*

Problem meetings cannot be predicted; however, the Engineer will advise the USEPA of all such meetings and will make every effort to provide 48 hours notice of problem meetings. The operator will meet with the Engineer to discuss the status of removal activities. The purpose of the meeting is to define and resolve the problem or recurring work deficiency in the following manner:

- Define and discuss the problem or deficiency;

- Review alternate solutions; and

- Implement a plan to resolve the problem or deficiency.

The special meeting will be documented by the Engineer and minutes will be transmitted to all parties.

11.4 *TESTING AND INSPECTIONS*

At a minimum, the tests and monitoring described and required by these documents will be performed by the Engineer or the Engineer's Site Representatives.

If air particulate monitoring exceeds action levels (ambient air quality or PEL standards as described in the Contingency Plan), the Engineer shall have the right to halt all site activity until proper and sufficient dust control measures are implemented.

Inspection results to be documented by the Engineer shall include, but not be limited to, the following:

- Results of inspections of erosion and sedimentation control facilities, as well as the inspections to occur following storm events; and

- Particulate monitoring data logged as specified in the HASP.

Daily log reports will be compiled by the Engineer and maintained at the site during the duration of the removal process. At the completion of the work, the daily logs will be compiled into a final CQA report. The final CQA report will verify the removal of soil/material from designated areas. The final CQA report will be incorporated in a final report to the USEPA.

11.5 *FINAL CQA REPORT*

The final CQA report provides the permanent record of the construction to assure the regulatory agencies that the Site was remediated in accordance with the specifications. The final CQA report will provide data as specified in this CQA plan, and will be prepared by the Engineer with assistance from the CQA inspector(s). **The final CQA report will also provide a summary of the work undertaken to implement the RAP. The actual Removal Action Plan and Field Investigation Report, previously**

submitted and approved by USEPA, will be incorporated into the CQA by reference.

11.5.1 *Contents*

At a minimum, the final CQA report will contain:

- General summary of work to include contractors, construction activities, observations, problems and corrective actions, modification from design, etc.;
- Original plans and specifications;
- CQA inspection reports;
- Test results and certifications of all materials used in the construction;
- Project photographs including those documenting work completion; and
- Certification by the Engineer that the document is complete and accurate and that the site remediation has been completed in accordance with the Remedial Action Design documents.

11.5.2 *Distribution*

- The original document will remain with Environmental Resources Management, Inc.
- Two (2) copies will be provided to the Respondent.
- Three (3) copies will be provided to the USEPA.
- Three (3) copies will be provided to the VADEQ.

12.0 IMPLEMENTATION SCHEDULE

The implementation schedule for this Removal Action is provided as **Figure 7**. This schedule is based on, and sensitive to, fixed time for regulatory approvals of RAC and disposal facilities. If the regulatory approvals are delayed, the schedule will shift forward accordingly.

Figur

Anticipated Pro edule

Virginia Scrap Iron and . Company, Inc.

ID	Name	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10
1	Submittal of Supplemental Removal Plan to USEPA	◆									
2	Review of Supplemental Removal Plan by USEPA										
3	Implementation of Supplemental Removal Plan										
4	Completion Report										
5	Submittal of Completion Report to USEPA										◇

AR100771

Project: Va Scrap Supplemental F
Date: 7/13/95

Critical
Noncritical
Progress
Milestone ◆
Summary
Rolled Up ◇

Appendix A
Health and Safety Plan

Virginia Scrap Iron & Metal Company, Inc.

Roanoke Avenue Site

Health and Safety Plan

Roanoke , Virginia

Docket No. III-95-09-DC

24 August 1995

Environmental Resources Management, Inc.
3140 Chaparral Drive S.W., Suite 201
Roanoke, VA 24018

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1.0 SITE-SPECIFIC HEALTH AND SAFETY PLAN

The following site-specific health and safety plan (HASP) has been developed for use by ERM personnel, Subcontractors of ERM and other personnel designated by ERM during site activities at the Virginia Scrap Iron and Metal Company, Inc. Roanoke Avenue Site (Site) located in Roanoke, Virginia. This HASP is supplemented by ERM's "OSHA 1910.120 Health and Safety Guidance Manual for Hazardous Waste Site Operations". This manual provides specific detailed information on the procedures and practices outlined below. ERM, Inc. personnel assigned to field operations associated with this project are required to participate in ERM's medical monitoring program (see Attachment B) and training program (see Attachment C), which includes completion of the 40- hour HAZWOPER course and subsequent 8-hour Refreshers as needed. A file will be kept on each ERM employee and will contain copies of his/her certifications, a respirator fit test record, and a letter from the examining physician responsible for the employee's annual physical as called for in ERM's medical monitoring program. The letter will include a statement from the examining physician verifying the employees ability to perform tasks required by field personnel and his/her ability to wear a respirator.

It is the responsibility of each person required to work in the exclusion zone to read and understand this HASP. The acknowledgment page at the end of this plan is to be signed by each employee after reading this plan. The Site Safety and Health Supervisor (SSHS) will maintain a copy of this page in the Site file.

It will be the responsibility of the ERM Site Health and Safety Coordinator to review this HASP and update it as necessary to accommodate future site activities. This HASP will be updated, as necessary, based on information obtained during site activities.

ERM has been advised that copies of this HASP may be provided to other contractors and other persons working on the Site. All subcontractors working at the Site will be required to comply with the HASP. ERM prepared this HASP in conformity with that degree of care ordinarily exercised by environmental consultants providing such services. Contractors and other persons provided with this HASP must be advised by anyone providing this HASP to them to review this HASP to ensure its appropriateness for the work being conducted by them and any use by Contractors or other persons of this HASP shall be in addition to the Contractors or other persons maintaining a safety program in accordance

with their established practices. Each Contractor or other person shall have sole responsibility for implementing the Contractor's or other person's own safety program. ERM shall not be responsible for supervising the implementation of any Contractors' or other persons' safety programs or for their safety. The services performed by ERM for Respondents shall in no way inure to the benefit of any Contractor or other person so as to give rise to any cause of action.

1.1 *SITE NAME AND ADDRESS*

Virginia Scrap Iron and Metal Co.
Roanoke Avenue
Roanoke, Virginia 24014

1.2 *DESIGNATED SITE PERSONNEL AND RESPONSIBILITIES*

Project Coordinator - Bren Huggins

Responsible for management of the entire project and is the off-site person duly responsible for all aspects of the field activities.

Site Manager/ Health and Safety Officer - Ross Miller

Mr Miller will be responsible for coordination and supervison of the field activities. Mr. Miller will conduct the sampling activities, and will be responsible for field activity documentation. As the Site Health and Safety Officer, Mr. Miller will be responsible for implementation of the Health and Safety Plan, any necessary field modifications of this Health and Safety Plan, maintaining adequate supplies of all personal protective equipment, conducting daily health and safety briefings, conducting and documenting daily monitoring instrument field checks, and suspending activities at the site that are not in conformance with the Health and Safety Plan.

Field Technician - Rob Estes

Responsible for assisting the Site Manager in all aspects of the field activity.

REMOVAL ACTION CONTRACTOR (RAC) - ERM-ENVIROCLEAN

RAC-Project Manager - Tom Gilardi, P.E.

Mr. Gilardi will coordinate and provide executive supervision of all excavation, transportation and disposal activites of the soil/material from the Site.

RAC Site Manager - Stacy Worthy

Ms. Worthy will provide the on-site supervision of the removal activites for the RAC. This role will entail site preparation (i.e. removing the vegetation, setting up the decontamination area) and the coordination of the excavation and manifesting of the waste from the Site.

1.3 *SITE DESCRIPTION AND BACKGROUND*

The Virginia Scrap Iron and Metal (Site) is located in a mixed industrial/commercial area of western Roanoke, Virginia. The property is currently used for the recycling of non-precious metals and storage of scrap iron and steel. Scrap metal stored on site is subsequently sold to recycling mills. A portion of the property is used for tractor trailer storage and transporting stock materials. Buildings on site include a small cinder block office at the site entrance and several small storage buildings located in the central portion of the site.

The Site is bordered on the north, west, and east sides by a bend in the Roanoke River. The Norfolk and Southern Railroad marks the southern border of the Site. Topography at the site generally slopes gently northward towards the Roanoke River. However, historical regrading activities have created varying, localized surface water runoff patterns at the site.

The Site was conveyed to the Virginia Scrap Iron and Metal Co., Inc. (VSIM) by the Virginia Holding Corporation in October 1976. The facility is currently in operation. Previous investigations at the Site include a 1985 investigation by the City of Roanoke's Hazardous Materials Team and an environmental assessment (EA) conducted by Dewberry & Davis in 1991(Phase I) and 1992 (Phase IIA). The 1985 investigation was related to the deposition of 55 gallon drums and some tanks in the northeastern corner of the property resulting from the November 1985 flood. The tanks were removed and scrapped by a contractor retained by the City of

Roanoke. The City of Roanoke Hazardous Materials Team investigated the drums and tanks and determined that hazardous materials were not present. The drums were not removed by the city.

The EA was conducted for the City of Roanoke as part of the City's Roanoke River Flood Reduction Project (RRFRP). The EA consisted of passive soil gas sampling, hand auger soil sampling, ground water sampling from a temporary well, and a composite sample of water from drums. The EA reported low to moderate levels (less than 100 ppm) of total petroleum hydrocarbons (TPH) in soils, TPH concentrations between 1 and 3 ppm in ground water, and no significant constituent detections in the composite drum sample. The EA reported one lead concentration on the site which exceeded the MCL in ground water. However, the sample was collected from a temporary well. It is not currently known if the sample was filtered or unfiltered. No lead concentrations in soils exceeded 1000 mg/kg.

In January 1994, the United States Army Corps of Engineers referred the Site to the Region III of the United States Environmental Protection Agency (USEPA) following the completion of the RRFRP assessment. The USEPA Technical Assistance Team (TAT) conducted a Site Assessment in February 1994, which included the collection of several soil and surface water samples across the Site. One sample collected from Debris Pile #1 contained a lead concentration exceeding 1000 mg/kg (2,840 mg/kg). This sample (VSS-2) initiated EPA's response action.

As a result of the lead concentrations at the Site, an Administrative Order by Consent (Order) was drafted to address the delineation and removal of lead contaminated soils above the 1,000 mg/kg Removal Response Goal (RRG).

1.4 *SITE ACCESS AND CONTROL*

Site access will be strictly controlled by ERM. Anyone entering the site will sign-in on the daily log maintained by the SSHS and sign-out upon departure. The daily log will consist of a dedicated field notebook used solely for daily recording of names of all site personnel and visitors, and the names of those persons entering the exclusion zone.

The site work areas will be divided into work zones as a means to control access and decontamination efforts. Work zones include the following:

- Contaminant reduction (decontamination) zone where decontamination processes will take place. Location of the decontamination pad and contaminated personal protective equipment.
- Exclusion zone-potentially contaminated area.

The two exclusion zones will be served by one common contaminant reduction zone and one support zone, as shown on Figure 1.

The SSHO will designate the work zones described above. Only authorized personnel will be permitted in the contaminant reduction and exclusion zones. The SSHO will be responsible for assuring that these zones are clearly delineated and access only by personnel meeting the medical monitoring and training requirements specific to 29 CFR 1910.120.

1.5 *LIST OF KEY CONTAMINANT OF CONCERN*

Table 1 and Attachment E provide a description of the chemical hazards associated with the scheduled site activities.

Table 1 *Characteristics of the Key Contaminant of Concern*

Contaminant	PEL/TLV-TWA; IDLH	Routes of Exposure	Symptoms of Acute Exposure	Characteristics/ Instrumentation
Lead	0.05 mg/m^3 100 mg/m3	Inhalation, Ingestion, Contact	Weakness, insomnia, facial pallor, anorexia, irritated eyes, colic, tremor, abdominal pain, hypertension	Heavy, ductile, soft gray solid Real-time airborne particulate monitor

1.6 *LIST OF POTENTIAL PHYSICAL HAZARDS*

Because of the nature of the current Site operations (scrap metal handling), steel-toed/shank safety shoes, hard hats and safety glasses will be worn at all times, and care will be taken when working in close proximity to facility operations and when working around any salvage materials on the

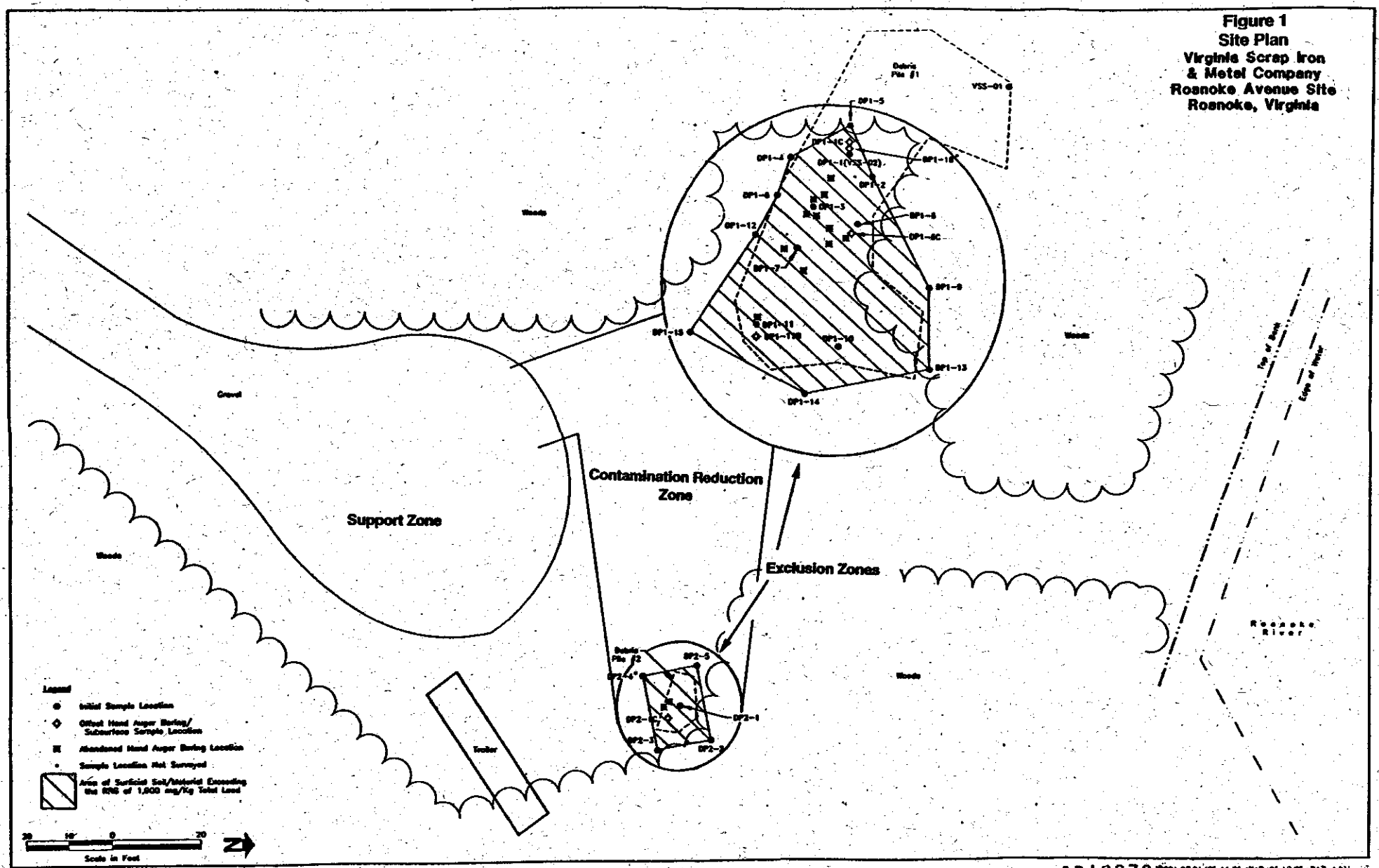


Figure 1
Site Plan
Virginia Scrap Iron
& Metal Company
Roanoke Avenue Site
Roanoke, Virginia
Debris Pile #1
VSS-01
DP1-5
DP1-10
DP1-4
DP1-1(VSS-02)
DP1-18
DP1-2
DP1-6
DP1-3
DP1-12
DP1-8
DP1-8C
DP1-7
DP1-9
DP1-11
DP1-15
DP1-13B
DP1-10
DP1-13
DP1-14
Woods
Creek
Support Zone
Contamination Reduction Zone
Exclusion Zones
Woods
Woods
Woods
Edge of Bank
Edge of Water
Roanoke River
Debris Pile #2
DP2-5
DP2-4
DP2-1
DP2-2
DP2-3
Trailer
Legend
Initial Sample Location
Offset Hand Auger Boring/ Subsurface Sample Location
Abandoned Hand Auger Boring Location
Sample Location Not Surveyed
Area of Surficial Soil/Material Exceeding the RRS of 1,600 mg/Kg Total Lead
20 10 0 20
Scale in Feet
N

AR100781

1.6 *LIST OF POTENTIAL PHYSICAL HAZARDS*

Because of the nature of the current Site operations (scrap metal handling), steel-toed/shank safety shoes, hard hats and safety glasses will be worn at all times, and care will be taken when working in close proximity to facility operations and when working around any salvage materials on the Site. Leather work gloves will also be worn when working around the salvage material. Wherever possible, physical hazards will be removed from the work area. **The potential physical hazards include scrap metal, uneven ground surfaces, construction debris, ticks, snakes, etc.**

A tire-mounted backhoe and a loader will be used during the removal operations. Personnel will exercise care and awareness of proper use and safety requirements while using equipment. Any power tools will be operated away from materials that may ignite. Safety glasses will be worn while equipment is operating.

1.7 *PLANNED SITE ACTIVITIES*

Planned site activities include: excavation and removal of soil/material from Debris Pile #1 and Debris Pile #2 using a tire-mounted backhoe and a loader, and confirmation soil sampling following the removal of the soil/material. A total of approximately 139.5 cubic yards of material will be removed from the Site. It is anticipated that six (6) confirmation soil samples will be collected from Debris Pile #1, and two (2) confirmation soil samples will be collected from Debris Pile #2. In addition, one (1) equipment blank, one (1) duplicate and one (1) matrix spike samples will be collected for QA/QC purposes. In the event that additional excavation is required based on the results of the initial confirmation samples, additional samples will be collected in accordance with the procedures outlined in QAPP contained within the EPA-approved RAP dated 1 March 1995. It is anticipated that the excavation and sampling can be completed within two to three days. The expected start date of activities is dependent upon EPA approval of the Plan. **Table 2** provides an assessment of hazards associated with these activities.

Table 2 *Field Task Hazards and PPE*

Task	Potential Hazard	PPE Level of Protection
Soil/material excavation; Confirmational soil sample collection	Skin contact with and/or inhalation of contaminated soil	Level D or C: steel-toed/shank safety shoes, eye/ear protection, Tyvek suits, Hazco booties, latex gloves, 1/2-face or full-face respirators with combination cartridges if instrument readings merit. The SSHO will determine PPE upgrades and downgrades.

1.8 *PLANT-REQUIRED HEALTH AND SAFETY PROCEDURES*

All health and safety procedures currently established by the site owner and employees of the current tenants using the property will be adhered to.

1.9 *SAFETY PROCEDURES*

All site activities are anticipated to be conducted under USEPA Level C or Level D conditions. Personal protective equipment will include: safety glasses; hard hat; steel-toed/shank safety shoes; Tyvek coveralls; disposable overboots; and gloves. Levels of protection will be governed by requirements specified in Section 1.11. Other requirements will include: no smoking or eating during on-site activities and alertness to the presence of salvage materials, refuse materials, and salvage equipment in the site vicinity. The work area will be kept free of refuse and egress routes from the area will not be blocked. Access to the investigation area by current tenant employees will not be permitted. Each morning's activities will begin with a tailgate meeting held by the SSHS for all team members to address specific hazards for that days' activities

Level C protection will be utilized during these procedures until such time that airborne concentrations of lead are characterized and determined to

be below 5 mg/m^3 as required by OSHA 1910.1025 (b). Level D may then be donned with periodic air monitoring. Monitoring for airborne dust particles will be conducted using a Real-Time Aerosol Monitor (RAM-1) or equivalent instrumentation. **All air monitoring data will be recorded in the field log book by the SSHO.**

Attachment A describes the levels of PPE and associated components.

Monitoring

- Air monitoring will be conducted continually until exposures are characterized such that periodic monitoring is warranted. A Real Time Airborne Particulate Monitor (RAM) will be used. Readings from the RAM will be used to characterize inorganic lead concentrations in air. Periodic monitoring will be conducted at a frequency of no less than every two hours during sampling/augering activities, unless otherwise determined by the SSHO.
- Air quality will be monitored prior to entering the work area and while the work is being performed. If at any time the instrument reading exceeds the action levels, the work will be stopped until the conditions can be corrected.

Egress

- When action levels are exceeded, operations will cease, personnel will immediately leave the area, the Health and Safety Coordinator will be contacted, and an upgraded level of Health and Safety will be implemented.

Decontamination

- All decontamination activities will occur at a designated area at the Site. The decontamination of removal equipment is expected to be minimal. The procedures for decontamination of removal equipment will only include dry brushing of the equipment at each of the removal areas or staging area. This brushing will be accomplished using metal brushes or suitable brooming equipment. All of the soil/material removal will be performed in dry conditions; therefore, the soil particles sticking to the equipment can be easily brushed down. It is expected that water or power hydraulic washing will not be necessary.

  The removal equipment will be placed on a plastic tarp or liner for performing the brushing down of the soil/material particles. The soil/material particles resulting from the brushing procedures will be

disposed along with soil/material from the removal process. The confirmation of decontamination will be based on visual inspection to ensure that all soil particles have been removed from the equipment.

- All non-disposable sampling equipment will be decontaminated between sample locations, according to the following procedure in the listed sequence:

  1) Tap water rinse;
  2) Manual scrub with non-phosphate soap solution;
  3) Tap water rinse;
  4) 10% nitric acid rinse;
  5) Tap water rinse;
  6) Triple rinse with distilled water; and
  7) Air dry.

  All decontamination fluids will be contained in 55-gallon DOT drums.

- Personnel decontamination stations consisting of a boot wash/rinse, glove wash/rinse and PPE disposal will be set up in the decon zone for each work area. Personnel will be required to decontaminate themselves prior to leaving the contaminant reduction zone located in their work area.

Attachment D describes decontamination procedures based on the level of PPE.

1.10 *SPECIAL PROCEDURES AND PRECAUTIONS:*

The only potential chemical hazard known is the presence of lead in soils. If dusty, dry and windy conditions prevail, then operations will cease and the working area will be monitored using a Real Time Airborne Particulate Monitor. Action levels for particulates are addressed below. Operations will cease if particulate levels exceed action levels. In this event, the Site Health and Safety Officer will notify the Site Health and Safety Coordinator, and appropriate steps for upgrading the Health and Safety Level will be implemented.

1.11 ACTION LEVELS:

Table 3 presents a list of the Action Levels for the key contaminants of concern at the Site.

Table 3 Action Levels for the Key Contaminants of Concern

Contaminant: Lead

Hazard/Activity	Location	Action Level	Level of Protection
Particulates in air during excavation and sampling	Debris Pile #1 Debris Pile #2	0 - 5 mg/m^3	Level D
		>5 mg/m^3	Level C, 1/2- face respirator with HEPA filter. If airborne particulate concentrations impair visibility, work will be stopped and dust suppression techniques employed

NOTE:

Given the maximum concentration of all metals found in soils (as found in the USEPA-TAT sampling data), no OSHA PEL's or ACGIH TLV's for each of the specified compounds would be exceeded following the standard for non-specific nuisance particulates. The TLV for nuisance dust is 10 mg/m^3. In acknowledgment of the hazards associated with metal compounds detected on-site, this TLV has been reduced by 50% in establishing the action levels.

The TLV for Pb (8-hr) = 0.05 mg/m^3
If Pb in soil is less than or equal to 5,210 ppm, Pb comprises 0.521% of the contents of resulting airborne particulate. At nuisance dust level of 10 mg/m^3 x 0.521%, Pb exposure concentration equals 0.0521 mg/m^3 (less than the TLV)

At nuisance dust level of 5 mg/m^3 x 0.521%, Pb exposure concentration equals 0.0261 - much lower than the TLV.

1.12 CONTINGENCY PROCEDURES

As previously described herein, chemical and physical hazards are anticipated to be minimal. Procedures for monitoring for particulates during dusty, dry, and windy conditions will be employed. Operations will cease during hazardous weather conditions (i.e. thunder storms, etc..), and level of protection will be upgraded as necessary based on action

levels, or at the discretion of the site Health and Safety Officer or Health and Safety Coordinator.

In the event of an emergency, ERM site personnel will notify the Site Safety and Health Supervisor. Based on the emergency, the SSHS may notify outside authorities. The SSHS will be responsible for responding to all ERM emergencies and will:

1. Notify appropriate authorities and/or health care facilities of the activities and hazards of the investigations. The SSHS will provide the health care facility with the necessary information regarding ERM's medical insurance carrier so that emergency treatment is not impeded by service reimbursement issues;
2. Notify the ERM Project Manager and ERM Health and Safety Coordinator of any and all site-related emergencies;
3. Ensure that the following safety equipment is available at the site: eyewash station, first aid supplies, and fire extinguishers. A list of necessary safety equipment (type and quantity) will be developed based upon number of on-site personnel necessary to conduct the scheduled activities;
4. Have working knowledge of all safety equipment available at the site; and
5. Ensure that a map which details the most direct route to the nearest hospital is prominently posted with the emergency telephone numbers.

1.13 EMERGENCY CONTACTS:

Police:	911
Fire:	911
Ambulance:	911

Hospitals:

Roanoke Memorial Hospital
(703) 981-7337 Emergency Number

Community Hospital of Roanoke Valley
(703) 985-8000

Project Coordinator:

Bren Huggins
ERM, Inc.
(703) 776-3545 (Office)
(703) 473-3285 (Home)
(800) 520-4211 (Pager)

Health and Safety Officer:

Ross Miller (703) 776-3545

1.14 *DIRECTIONS TO NEAREST HOSPITAL*

Roanoke Memorial Hospital:

Approximately 2 miles from the Site; Estimated Driving Time is 5-10 minutes.

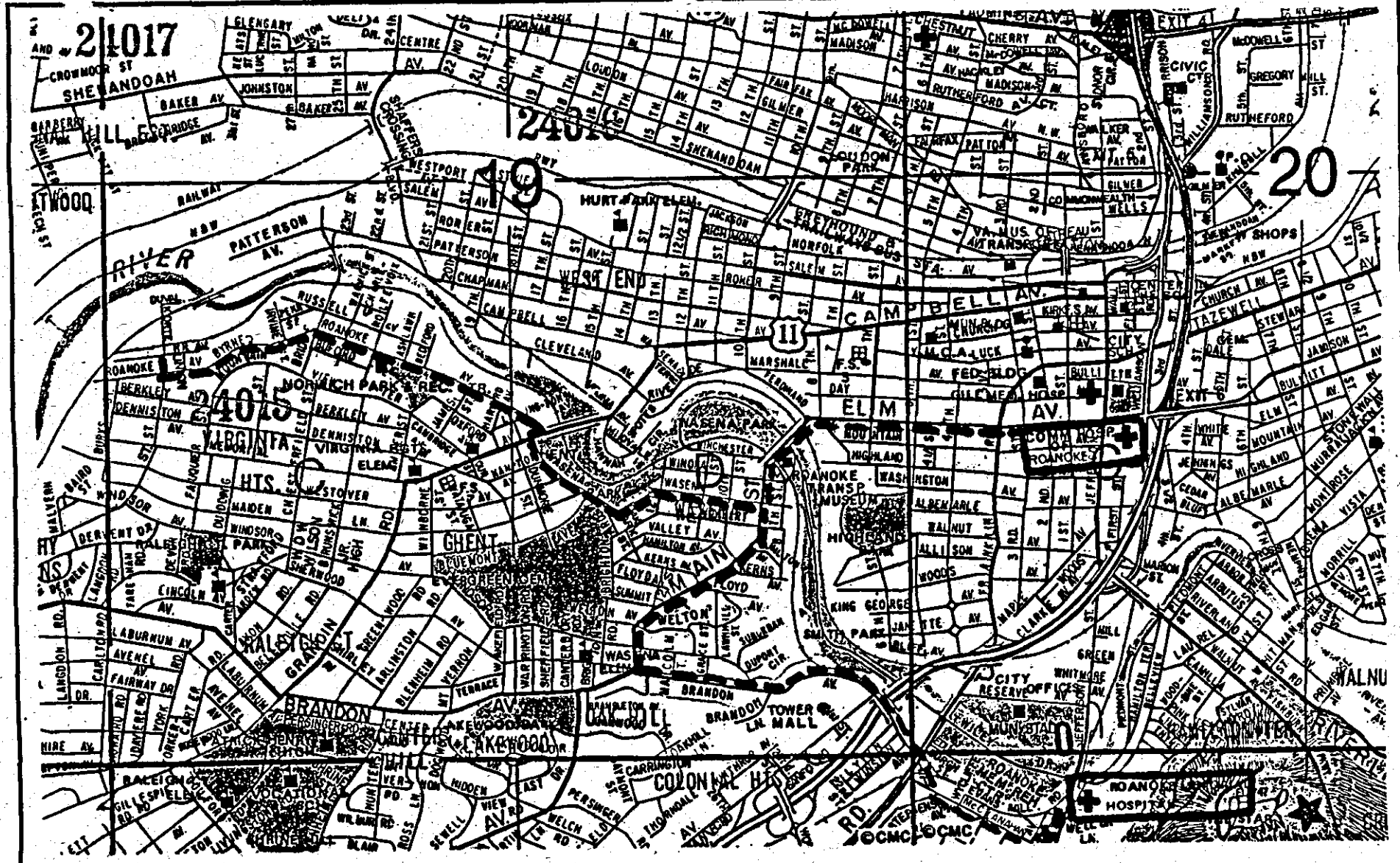
Exit site property and take a left onto Roanoke Avenue. Follow Roanoke Avenue for approximately 0.75 mile and make a right onto Memorial Avenue, then take the very next left onto Wasena Avenue. Follow Wasena Avenue for approximately 0.5 mile, and turn right onto Main Street. Follow Main Street for approximately 0.5 mile and turn left onto Brandon Avenue. Follow Brandon Avenue until it merges into McClanahan Street. Follow McClanahan for approximately 0.25 mile and turn right onto Belleview Avenue. Roanoke Memorial hospital will be on the right.

See attached map **(Figure 2)**.

Community Hospital of Roanoke Valley:

Approximately 2.25 miles from the Site; Estimated Driving Time is 10-15 minutes.

Exit site property and take a left onto Roanoke Avenue. Follow Roanoke Avenue for 0.75 mile and make a right onto Memorial Avenue, then take the very next left onto Wasena Avenue. Follow Wasena Avenue for approximately 0.5 mile, and turn left onto Main Street. Once Main Street



Source: Rand McNally Street Finder, Roanoke & Vicinity.

W.O. #:	J9601.00.01
Drawn By/Date:	RGM/2-24-95
Checked By/Date:	MSB/2-24-95
Revised By/Date:	
Checked By/Date:	

Figure 2

Directions to Hospitals

Virginia Scrap Iron & Metal
Roanoke, Virginia

ERM
808 Moorefield Park Drive, Suite 200
Richmond, Virginia 23236
(804) 330-8990

crosses the Roanoke River, it becomes Elm Avenue. Follow Elm Avenue for approximately 1 mile. Community Hospital is on the right.

See attached map **(Figure 2).**

1.15 ACKNOWLEDGMENT OF PLAN

_____
Project Coordinator/Date

_____
Safety Coordinator/Date

Acknowledgment of Review and Understanding of this HASP

_____

_____

_____

_____

_____

_____

Attachment A
Personal Protective Equipment

ATTACHMENT A

PERSONAL PROTECTIVE EQUIPMENT

A.1 Protective Equipment

All personnel must be provided with appropriate personal safety equipment and protective clothing. Each individual will be properly trained in the use of this safety equipment before the start of field activities. Safety equipment and protective clothing shall be used as directed by the Site Safety Officer. All such equipment and clothing will be cleaned and maintained in proper condition by project personnel. The Site Safety Officer will monitor the maintenance of personal protective equipment to ensure proper procedures are followed.

Personal protective equipment will be worn at all times, as designated by the Health and Safety Plan. Levels of protective clothing and equipment have been assigned to specific work tasks.

The personal protective equipment levels designated below are in conformance with EPA criteria for Levels B, C, and D protection. All respiratory protective equipment used will be approved by NIOSH/MSHA.

A.2 Level B Protection

A. Pressure demand cascade air-line system or other suitable self-contained, pressure demand breathing apparatus.

B. Chemical-resistant clothing such as Poly-coated Tyvek®, Saranex® or acid suit. Suits will be one piece with hoods, booties and elastic wrist bands.

C. Outer nitrile and inner latex surgical gloves.

D. Steel-toed/shank safety shoes with rubber overboots.

E. Water-resistant tape over protective clothing as necessary.

F. Hard Hat.

G. Options as required:

1. Coveralls
2. Disposable outer boots
3. Face shield
4. Hearing protection

A.3 Level C Protection

A. Full-face or half-face air purifying respirator equipped with appropriate organic vapor/dust canisters or cartridges.

B. Chemical-resistant clothing such as Tyvek®, Poly-coated Tyvek® or Saranex®. Suits will be one piece with hoods, booties and elastic wrist bands.

C. Outer nitrile gloves and inner latex surgical gloves.

D. Steel-toed/shank safety shoes with rubber overboots.

E. Hard Hats.

F. Safety Glasses.

G. Options as required:

1. Coveralls
2. Disposable outer boots
3. Escape mask
4. Face shield
5. Hearing protection
6. Water-resistant tape

A.4 Level D Protection

A. Coveralls or long sleeve shirts and long pants, unless otherwise directed by the Health & Safety Officer.

B. Outer nitrile gloves at a minimum for all hazardous or potentially hazardous material handling activities. Inner latex surgical gloves are recommended where practical.

C. Steel-toed/shank safety shoes.

D. Hard Hat.

E. Safety Glasses.

F. Options as required:

1. Disposable outer boots
2. Hearing protection
3. Chemical-resistant gloves

Attachment B
Medical Monitoring

ATTACHMENT B

MEDICAL MONITORING

The Occupational Safety and Health Administration (OSHA) has established requirements for a medical surveillance program designed to monitor and reduce health risks for employees potentially exposed to hazardous materials (29 CFR 1910.120). This program has been designed to provide baseline medical data for each employee involved in hazardous waste operations including field activities, and to determine his/her ability to wear personal protective equipment, such as chemical resistant clothing and respirators. Employees who wear or may wear respiratory protection must be provided respirators as regulated by 29 CFR 1910.134. This Standard requires that an individual's ability to wear respiratory protection be medically certified before he/she performs designated duties. Where medical requirements of 29 CFR 1910.120 overlap those of 29 CFR 1910.134, the more stringent of the two will be enforced.

The medical examinations must be administered on a pre-employment and annual basis and as warranted by symptoms of exposure or specialized activities. These examinations shall be provided by employers without cost or loss of pay to the employee. For the purposes of this Health and Safety Plan, all subcontractors shall assume the employer's responsibility in obtaining the necessary medical monitoring and training for their employees pursuant to this section of 29 CFR 1910.120.

The medical examinations shall include the following:

A. Medical History and Physical, Including:

- Medical questionnaire.
- Completion of medical history with occupational risk factor analysis.
- Examination by physician.
- Evaluation of test results.
- Brief report sent to employer covering specific requested areas as well as pertinent positive findings; report sent to family physician and employee by request.

B. *Pulmonary Function Testing (FEV_1, FVC)*

C. *EKG (12-lead)*

D. *Lab tests, Including*

- Urinalysis
- Blood Chemzyme Analysis (Chem 18)
- Coronary Risk Screen
- Complete Blood Count with differential

E. *Audiometric testing - Supervised by Board-Certified Staff Otolaryngologist*

F. *Visual Acuity and Tonometry - Supervised by Board-Certified Staff Ophthalmologist*

The examining physician is required to make a report to the employer of any medical condition which would place such employees at increased risk of wearing a respirator or other personal protective equipment. Each employer engaged in site work shall assume the responsibility of maintaining site personnel medical records as regulated by 29 CFR 1910.120 where applicable. Exemption from the medical surveillance program may be allowed by the Health & Safety Coordinator in conjunction with the Project Manager. These exemptions will be based on their interpretation of the requirements of 1910.120 relative to each individual exemption request.

Basically, an employee is required by federal regulations to have medical monitoring if the employee is or may be exposed to hazardous substances or health hazards at or above the permissible exposure limits for these substances, without regard to the use of respirators, for 30 days or more a year.

All employers contracted to work at the site designated by this Plan will be responsible to ensure their employees have received the proper medical tests as regulated by 29 CFR 1910.120 and shall provide the contractor with certification of same.

Attachment C
Personnel Training

ATTACHMENT C

PERSONNEL TRAINING

General site workers (such as equipment operators, general laborers and supervisory personnel) engaged in hazardous substance removal or other activities which expose or potentially expose workers to hazardous substances and health hazards shall receive a minimum of 40 hours of instruction off the site, and a minimum of three days actual field experience under the direct supervision of a trained, experienced supervisor. The training course must have included the following material at a minimum:

1. Safety and Health Officer and Site Management Responsibilities - personnel must understand Safety Coordinator and Site Management responsibilities and authority.
2. Site-Specific Health and Safety Hazards - personnel must be informed of specific hazards related to site and site operations.
3. Personal Protection Equipment (PPE) - personnel must be trained in proper use of personal protective equipment.
4. Safe Work Practices/Engineering Controls - personnel must be informed of appropriate work practices and engineering controls that will reduce the risk of exposure to site hazards.
5. Safety Equipment Use - personnel must understand the use of monitoring instruments and other safety equipment.
6. Medical Surveillance Program - personnel must be informed of requirements for medical surveillance of hazardous waste site employees.
7. Site Control Methods - personnel must understand site methods used to reduce exposure to on-site and off-site personnel.
8. Decontamination Procedures - personnel must be trained in proper decontamination operations and procedures.
9. Emergency Response - personnel must be trained in proper emergency response operations and procedures.

10. Confined Space Entry/Special Hazards - personnel involved in specific hazardous activities, such as confined space entry and drum handling, must receive training in appropriate techniques to employ during such operations.

Workers on site only occasionally for a specific limited task (such as, but not limited to, ground water monitoring, land surveying, or geo-physical surveying) and who are unlikely to be exposed over permissible exposure limits and published exposure limits shall receive a minimum of 24 hours of instruction off the site, and the minimum of one day actual field experience under the direct supervision of a trained, experienced supervisor.

Workers regularly on site who work in areas which have been monitored and fully characterized indicating that exposures are under permissible exposure limits where respirators are not necessary, and the characterization indicates that there are no health hazards or the possibility of an emergency developing, shall receive a minimum of 24 hours of instruction off the site and the minimum of one day actual field experience under the direct supervision of a trained, experienced supervisor.

Workers with 24 hours of training who meet the criteria for 24 hour training cited above, and who become general site workers or who are required to wear respirators, shall have the additional 16 hours and two days of training necessary to total the training specified for the 40 hour training criteria.

Management and supervisors on-site who are directly responsible for, or who supervise employees engaged in hazardous waste operations shall have received 40 hours of initial training and three days of supervised field experience. Training may be reduced to two days with at least eight additional hours of specialized training at the time of job assignment as delineated in 29 CFR 1910.120 (e)(4).

Annual refresher training consisting of eight hours of instruction is required of all employees, managers and supervisors who have completed the initial specified training requirements for working on-site as indicated in 29 CFR 1910.120 (e)(8).

Health and safety training programs shall comply with criteria set forth by OSHA as per final regulation 29 CFR 1910.120. This program will instruct employees on general health and safety principles and procedures, proper

operation of monitoring instruments, and use of personal protective equipment.

In addition, site employees will undergo site-specific training prior to the start-up of any given project or task. As activities change at a particular site, related training will address potential hazards and associated risks, site operating procedures, emergency response and site control methods to be employed.

Specialized training may be provided as dictated by the nature of site activities. Specialized training will be provided for activities such as confined space entry, excavations and handling of unidentified substances. Employees involved in these types of activities will be given off-site instruction regarding the potential hazards involved with safety activities and the appropriate health and safety procedures to be followed. Off-site instruction is meant to include any area where employees will not be exposed to site hazards.

This Health and Safety Plan must be distributed to all subcontractors prior to the start of field activities. A pre-operation meeting will be held to discuss the contents of the Plan. Specialty training will be provided as determined by task and responsibility. All training of personnel will be conducted under direct supervision of a trained Health and Safety Coordinator or his designee.

Exemptions from training may be approved by the Health & Safety Coordinator in conjunction with the Project Manager.

Attachment D
Decontamination

ATTACHMENT D

DECONTAMINATION

D.1 General

Personnel involved with hazardous material handling may be exposed to compounds in a number of ways, despite the most stringent protective procedures. Personnel may come in contact with vapors, gases, mists, or particulates in the air, or may come in contact with site media while performing work tasks. Use of monitoring instruments and equipment can also result in exposure to hazardous substances.

In general, decontamination involves scrubbing with a non-phosphate soap/water solution followed by clean water rinses. All disposable items will be disposed of in a dry container. Certain parts of contaminated respirators, such as harness assemblies and leather or cloth components, are difficult to decontaminate, If grossly contaminated, they may have to be discarded. Rubber components can be soaked in soap and water and scrubbed with a brush. In addition to being decontaminated, all respirators, non-disposable protective clothing, and other personal articles must be sanitized before they can be used again unless they are assigned to individuals. The manufacturer's instructions should be followed in sanitizing the respirator masks. The Site Safety Officer or his designee will be responsible for supervising the proper decontamination of protective equipment.

D.2 Standard PPE Decontamination

The Site Safety Officer or his designee will monitor decontamination procedures to ensure their effectiveness. Modifications of the decontamination procedure may be necessary as determined by the Site Safety Officer or his designee.

Level B - Personal Protection Decontamination Procedure

Step 1 - Segregated Equipment Drop

Deposit equipment (tools, sampling devices, notes, monitoring instruments, radios, etc.) used on the site onto plastic drop cloths.

Step 2 - Boot Covers and Glove Wash

Outer Boot covers and outer gloves should be scrubbed with a decontamination solution of detergent and water.

Step 3 - Rinse Off Boot Covers and Gloves

Decontamination solution should be rinsed off boot covers and gloves using generous amounts of water. Repeat as many times as necessary.

Step 4 - Tape Removal

Remove tape from around boots and gloves and place into container with plastic liner.

Step 5 - Boot Cover Removal

Remove disposable boot covers and place into container with plastic liner.

Step 6 - Outer Glove Removal

Remove outer gloves and deposit in container with plastic liner.

Step 7 - Suit/Safety Boot Wash

Completely wash splash suit, SCBA, gloves, and safety boots. Care should be exercised that no water is allowed into the SCBA regulator. It is suggested that the SCBA regulator be wrapped in plastic.

Step 8 - Suit/Safety Boot Rinse

Thoroughly rinse off all decontamination solution from protective clothing.

Step 9 - Tank Changes

This is the last step in the decontamination procedure for those workers wishing to change air tanks and return to the exclusion zone. The worker's air tank is exchanged, new outer glove and boot covers are donned, and joints taped.

Step 10 - Removal of Safety Boots

Remove safety boots and deposit in container with a plastic liner.

Step 11 - SCBA Backpack Removal

Without removing face piece, remove the SCBA backpack and place it on a table. Then disconnect the face piece from the remaining SCBA unit and proceed to the next station.

Step 12 - Splash Suit Removal

With care, remove splash suit. The exterior of the splash suit should not come in contact with any inner layers of clothing.

Step 13 - Inner Glove Wash

The inner gloves should be washed with a mild decontamination solution (detergent/water).

Step 14 - Inner Glove Rinse

Generously rinse inner gloves with water.

Step 15 - Face Piece Removal

Without touching face with gloves, remove face piece. Deposit face piece into a container which has a plastic liner.

Step 16 - Inner Glove Removal

Remove inner glove and deposit in container with plastic liner.

Step 17 - Field Wash

Wash hands and face thoroughly. If highly toxic, skin corrosive, or skin-absorbent materials are known or suspected to be present, take a shower or a sponge bath as soon as possible.

Level C Personal Protection Decontamination Procedure

Step 1 - Segregated Equipment Drop

Deposit equipment used on site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths or in different containers with plastic liners. Segregation at the drop reduced the probability of cross-contamination. During hot weather operations, cool down stations may be set up within this area.

Step 2 - Boot Cover and Glove Wash

Scrub outer boot covers and gloves with decon solution or detergent and water.

Step 3 - Boot Cover and Glove Rinse

Rinse off decon solution from station 2 using copious amounts of water.

Step 4 - Tape Removal

Remove tape around boots and gloves and deposit in container with plastic liner.

Step 5 - Boot Cover Removal

Remove boot covers and deposit in container with plastic liner.

Step 6 - Outer Glove Removal

Remove outer gloves and deposit in container with plastic liner.

Step 7 - Suit and Boot Wash

Wash splash suit, gloves, and safety boots. Scrub with long-handle scrub brush and decon solution.

Step 8 - Suit and Boot, and Glove Rinse

Rinse off decon solution using water. Repeat as many times as necessary.

Step 9 - Canister or Mask Change

If worker leaves exclusion zone to change canister, this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer gloves and boot covers donned, and joints taped. Worker returns to duty.

Step 10 - Safety Boot Removal

Remove safety boots and deposit in container with plastic liner.

Step 11 - Splash Suit Removal

With assistance of helper, remove splash suit. Deposit in container with plastic liner.

Step 12 - Inner Glove Rinse

Wash liner gloves with decon solution.

Step 13 - Inner Glove Wash

Rinse inner gloves with water.

Step 14 - Face Piece Removal

Remove face piece. Deposit in container with plastic liner. Avoid touching face with fingers.

Step 15 - Inner Glove Removal

Remove inner gloves and deposit in container with liner.

Step 16 - Field Wash

Wash hands and face. Shower or sponge bath if highly toxic, skin-corrosive or skin absorbable materials are known or suspected to be present.

Level D Personal Protection Decontamination Procedure

Step 1 -Boot Cover and Glove Wash (if applicable)

Scrub outer boot covers and gloves with decon solution or detergent and water.

Step 2 - Boot Cover and Glove Rinse (if applicable)

Rinse off decon solution from station 1 using copious amounts of water.

Step 3 - Boot Cover Removal (if applicable)

Remove boot covers and deposit in container with plastic liner.

Step 4 - Glove Removal (if applicable)

Remove gloves and deposit in container with plastic liner.

Step 5 - Field Wash

Wash hands and face with soap and water.

D.3 Emergency PPE Decontamination

As earlier stated, modifications of the decontamination procedure may be necessary as determined by the Site Safety Officer or designee. One example when modifications may be required is during a medical emergency. It is at this time that the SSO must determine the best course of action based on extenuating circumstances. At a hazardous waste cleanup operation it is more probable that a medical emergency would have more serious consequences than chemical exposure. For this reason, it is more likely that greater priority should be given to the victim's medical emergency rather than the victim's potential residual contamination.

If the victim is able, assist the victim through an abbreviated decontamination procedure. If the victim is unable to proceed through any decontamination procedure, use a portable eye wash/shower device to wash any obvious contamination from the victim's PPE while the victim is being treated for the medical emergency. If possible, carefully cut away and remove PPE.

Ensure the ambulance and hospital personnel are aware of the possibility of contamination on the victim.

Attachment E
Toxicological Profile - Lead

REFERENCE DOSE FOR ORAL EXPOSURE
o ORAL RFD SUMMARY :

A great deal of information on the health effects of lead has been obtained through decades of medical observation and scientific research. This information has been assessed in the development of air and water quality criteria by the Agency's Office of Health and Environmental Assessment (OHEA) in support of regulatory decision-making by the Office of Air Quality Planning and Standards (OAQPS) and by the Office of Drinking Water (ODW). By comparison to most other environmental toxicants, the degree of uncertainty about the health effects of lead is quite low. It appears that some of these effects, particularly changes in the levels of certain blood enzymes and in aspects of children's neurobehavioral development, may occur at blood lead levels so low as to be essentially without a threshold. The Agency's RfD Work Group discussed inorganic lead (and lead compounds) at two meetings (07/08/85 and 07/22/85) and considered it inappropriate to develop an RfD for inorganic lead.

For additional information, interested parties are referred to the 1986 Air Quality Criteria for Lead (EPA-600/8-83/028a-dF) and its 1990 Supplement (EPA/600/8-89/049F) or the following Agency scientists:

Harlal Choudhury / OHEA -- (513)569-7536

J. Michael Davis / OHEA -- (919)541-4162

Jeff Cohen / OST -- (202)260-5456

John Haines / OAQPS -- (919)541-5533

EVIDENCE FOR HUMAN CARCINOGENICITY

o CLASSIFICATION: B2; probable human carcinogen

o BASIS FOR CLASSIFICATION: Sufficient animal evidence.

Ten rat bioassaysand one mouse assay have shown statistically significant increases in renal tumors with dietary and subcutaneous exposure to several soluble lead salts. Animal assays provide reproducible results in several laboratories, multiple rat strains with some evidence of multiple tumor sites. Short term studies show that lead affects gene expression. Human evidence is inadequate.

o HUMAN CARCINOGENICITY DATA :

Inadequate. There are four epidemiologic studies of occupational cohorts exposed to lead and lead compounds. Two studies (Dingwall-Fordyce and Lane, 1963; Nelson et al., 1982) did not find any association between exposure and cancer mortality. Selevan et al. (1985), in their retrospective cohort mortality study of primary lead smelter workers, found a slight decrease in the total cancer mortality (SMR=95). Apparent excesses were observed for respiratory cancer (SMR=111, obs=41, $p>0.05$) and kidney cancer (SMR=204, obs=6, $p>0.05$). Cooper and Gaffey (1975) and Cooper (1985 update) performed a cohort mortality study of battery plant workers and lead smelter workers. They found statistically significant excesses for total cancer mortality (SMR=113, obs=344), stomach cancer (SMR=168, obs=34), and lung cancer (SMR=124, obs=109) in the battery plant workers. Although similar excesses were observed in the smelter workers, they were not statistically significant. Cooper and Gaffey (1975) felt it was possible that individual subjects were monitored primarily on the basis of obvious signs of lead exposure, while others who showed no symptoms of lead poisoning were not monitored. All of the available studies lacked quantitative exposure information, as well as information on the possible contribution from smoking. All studies also included exposures to other metals such as arsenic, cadmium, and zinc for which no adjustment was done. The cancer excesses observed in the lung and stomach were relatively small (<200). There was no consistency of site among the various studies, and no study showed any dose-response relationship.

Thus, the available human evidence is considered to be inadequate to refute or demonstrate any potential carcinogenicity for humans from lead exposure.

o ANIMAL CARCINOGENICITY DATA : Sufficient.

The carcinogenic potential of lead salts (primarily phosphates and acetates) administered via the oral route or by injection has been demonstrated in rats and mice by more than 10 investigators. The most characteristic cancer response is bilateral renal carcinoma. Rats given lead acetate or subacetate orally have developed gliomas, and lead subacetate also produced lung adenomas in mice after i.p. adminstration. Most of these investigations found a carcinogenic response only at the highest dose. The lead compounds tested in animals are almost all soluble salts. Metallic lead, lead oxide and lead tetralkyls have not been tested adequately. Studies of inhalation exposure have not been located in the literature.

Azar et al. (1973) administerd 10, 50, 100, and 500 ppm lead as lead acetate in dietary concentrations to 50 rats/sex/group for 2 years. Control rats (100/sex) received the basal laboratory diet. In a second 2-year feeding study, 20 rats/group were given diets containing 0, 1000, and 2000 ppm lead as lead acetate. No renal tumors were reported in the control groups or in treated animals of either sex receiving 10 to 100 ppm. Male rats fed 500, 1000, and 2000 ppm lead acetate had an increased renal tumor incidence of 5/50, 10/20, and 16/20, while 7/20 females in the 2000-ppm group developed renal tumors.

The Azar et al. (1973) study is limited by the lack of experimental detail. The possibility of environmental contamination from lead in the air or drinking water was not mentioned. The strains of rats used were not specified in the study, but the Health Effects Assessment for Lead (U.S. EPA, 1984) indicates the rats were Wistar strain. The weight gain at 1000 and 2000 ppm was reported to be depressed, but details were not given.

Kasprzak et al. (1985), in investigating the interaction of dietary calcium on lead carcinogenicity, fed 1% lead subacetate (8500 ppm Pb) to male Sprague-Dawley rats in the diet for 79 weeks. Of the rats surviving (29/30) in this treatment group beyond 58 weeks, 44.8% had renal tumors. Four rats had adenocarcinomas; the remainaing nine had adenomas. Bilateral tumors were noted. No renal tumors were noted among the controls.

As part of a study to determine interactions between sodium nitrite, ethyl urea and lead, male Sprague-Dawley rats were given lead acetate in their drinking water for 76 weeks (Koller et al., 1986). The concentration of lead was 2600 ppm. No kidney tumors were detected among the 10 control rats. Thirteen of 16 (81%) lead-treated rats had renal tubular carcinoma; three tumors were detected at 72 weeks and the remainder detected at the termination of the study.

Van Esch and Kroes (1969) fed basic lead acetate at 0, 0.1%, and 1.0% in

the diet to 25 Swiss mice/sex/group for 2 years. No renal tumors developed in the control group, but 6/25 male mice of 0.1% basic lead acetate group had renal tumors (adenomas and carcinomas combined). In the 1.0% group, one female had a renal tumor. The authors thought that the low incidence in the 1.0% group was due to early mortality.

Hamsters given lead subacetate at 0.5% and 1% in the diet had no significant renal tumor response (Van Esch and Kroes, 1969).

o SUPPORTING DATA :

Lead acetate induces cell transformation in Syrian hamster embryo cells (DiPaolo et al., 1978) and also enhances the incidence of simian adenovirus induction. Lead oxide showed similar enhanced adenovirus induction (Casto et al., 1979).

Under certain conditions lead compounds are capable of inducing chromosomal aberrations in vivo and in tissue cultures. Grandjean et al. (1983) showed a relationship between SCE and lead exposure in exposed workers. Lead has been shown, in a number of DNA structure and function assays, to affect the molecular processes associated with the regulation of gene expression (U.S. EPA, 1986).

ORAL EXPOSURE CARCINOGENICITY ASSESSMENT

o CLASSIFICATION: B2; probable human carcinogen

o BASIS FOR CLASSIFICATION: Sufficient animal evidence.

Ten rat bioassays and one mouse assay have shown statistically significant increases in renal tumors with dietary and subcutaneous exposure to several soluble lead salts. Animal assays provide reproducible results in several laboratories, in multiple rat strains with some evidence of multiple tumor sites. Short term studies show that lead affects gene expression. Human evidence is inadequate.

o ORAL DOSE-RESPONSE DATA : Not available.
Quantifying lead's cancer risk involves many uncertainties, some of which may be unique to lead. Age, health, nutritional state, body burden, and exposure duration influence the absorption, release, and excretion of lead. In addition, current knowledge of lead pharmacokinetics indicates that an estimate derived by standard procedures would not truly describe the potential risk. Thus, the Carcinogen Assessment Group recommends that a numerical estimate not be used.

CARCINOGENICITY ASSESSMENT DOCUMENTATION AND REVIEW

o CARCINOGENICITY SOURCE :
Source Document -- U.S. EPA, 1984, 1986, 1989

U.S. EPA, 1989 has received OHEA and SAB review.

The 1986 Air Quality Criteria Document for Lead has received Agency and External Review.

DOCUMENT

o REVIEW DATES: 05/04/88
o VERIFICATION DATE: 05/04/88
o EPA CONTACTS :

William Pepelko / OHEA -- (202)260-5898
Jim Cogliano / OHEA -- (202)260-3814

CLEAN AIR ACT REQUIREMENTS

Considers technological or economic feasibility? -- No

Discussion -- Under Section 109 of the CAA, EPA has set a primary (health-based) NAAQS for lead of 1.5 ug/cu.m, calendar quarter average not to be exceeded (43 FR 41258, 10/05/78). The secondary (welfare-based) NAAQS is identical to the primary standard. EPA is currently reviewing these standards to determine if changes are warranted.

Reference -- 40 CFR 50.12

U.S. EPA Contact -- Air Quality Management Division / OAQPS / (919)541-5656 / FTS 629-5656

AMBIENT WATER QUALITY CRITERIA FOR HUMANS

Water and Fish Consumption -- 5.0E+1 ug/L

Fish Consumption Only -- None

Considers technological or economic feasibility? -- NO

Discussion -- The criterion was set at the existing drinking water standard in 1980.

Reference -- 45 FR 79318 (11/28/80)

EPA Contact -- Criteria and Standards Division / OWRS

(202)260-1315 / FTS 260-1315

AMBIENT WATER QUALITY CRITERIA FOR AQUATIC ORGANISMS

Freshwater:
Acute -- 8.2E+1 ug/L (1-hour average)
Chronic -- 3.2E+0 ug/L (4-day average)

Marine:
Acute -- 1.40E+2 ug/L (1-hour average)
Chronic -- 5.6E+0 ug/L (4-day average)

Considers technological or economic feasibility? -- NO

Discussion -- Criteria were derived from a minimum data base consisting ofacute and chronic tests on a variety of species. The toxicity of this compound in freshwater is hardness dependent. The values given are for a hardness of 100 mg/L CaCO3. For a more complete discussion, see the referenced notice.

Reference -- 50 FR 30784 (07/29/85)

EPA Contact -- Criteria and Standards Division / OWRS
(202)260-1315 / FTS 260-1315

MAXIMUM CONTAMINANT LEVEL GOAL

Value (status) -- 0 mg/L (Final, 1991)

Considers technological or economic feasibility? -- NO
Discussion -- The MCLG for lead is zero based on (1) occurrence of low level effects and difficulties in identifying clear threshold levels, (2) the overall Agency goal of reducing total lead exposures, and (3) the classification of lead as a group B2 carcinogen.

Reference -- 56 FR 26460 (06/07/91); 56 FR 32112 (07/15/91)

EPA Contact -- Health and Ecological Criteria Division / OST /
(202) 260-7571 / FTS 260-7571; or Safe Drinking Water Hotline / (800) 426-4791

MAXIMUM CONTAMINANT LEVEL

Value -- None (Final, 1991)

Considers technological or economic feasibility? -- YES

Discussion -- EPA concluded that setting an MCL for lead is not feasible and believes that the treatment approach contained in the final rule (corrosion

control, source water reduction, public education and lead service lineproblems associated with establishing MCL's.

Monitoring requirements -- Tap water monitoring for lead and copper to determine whether a system is subject to the treatment technique requirements.

Water quality parameter sampling to determine the effectiveness of optional corrosion control treatment. Source water monitoring for lead and copper to determine source water's contribution to total tap water lead and copper levels, and the need for treatment. Monitoring schedules vary by system size and type of monitoring.

Analytical methodology -- Atomic absorption/furnace technique (EPA 239.2; ASTM D-3559-85D; SM 3113); inductively-coupled plasma/mass spectrometry (EPA 200.8); atomic absorption/platform furnace technique (EPA 200.9).

Best available technology:

Optimal corrosion control treatment: pH/akalinity adjustment, calcium adjustment; addition of corrosion inhibitor.

Source water treatment: Coagulation/filtration; ion exchange; lime softening; reverse osmosis.

Public education.

Lead service line replacement.

Reference -- 45 FR 57332 (08/27/80); 53 FR 31517 (08/18/88); 56 FR 26460 (06/07/91); 56 FR 32112 (07/15/91).

EPA Contact -- Drinking Water Standards Division / OGWDW / (202) 260-7575 / FTS 260-7575; or Safe Drinking Water Hotline / (800) 426-4791

IV.B.3. SECONDARY MAXIMUM CONTAMINANT LEVEL (SMCL) for Drinking Water

No data available

IV.B.4. REQUIRED MONITORING OF "UNREGULATED" CONTAMINANTS

No data available

REPORTABLE QUANTITIES

Value (status) -- 1 pound (Statutory, 1987)

Considers technological or economic feasibility? -- NO

Discussion -- The statutory 1-pound RQ for lead is retained pending assessment of its potential carcinogenicity and may be adjusted in a future notice of proposed rulemaking when the evaluation of available data is completed. Lead was evaluated for chronic toxicity, but was not ranked for toxicity because of insufficient data.

Reference -- 52 FR 8140 (03/16/87); 54 FR 33418 (08/14/89)

EPA Contact -- RCRA/Superfund Hotline
(800)424-9346 / (202)260-3000 / FTS 260-3000

RCRA REQUIREMENTS

Status -- Listed (total lead)

Reference -- 52 FR 25942 (07/09/87)

EPA Contact -- RCRA/Superfund Hotline
(800)424-9346 / (202)260-3000 / FTS 260-3000

TOXIC SUBSTANCES CONTROL ACT REQUIREMENTS

No data available

ORAL REFERENCE DOSE REFERENCES: None
INHALATION REFERENCE DOSE REFERENCES: None

CARCINOGENICITYASSESSMENT REFERENCES:

Anderson, E.L., and CAG (Carcinogenic Assessment Group). 1983. Quantitative approaches in use to assess cancer risk. Risk Analysis. 3: 277-295.

Azar, A., H.J. Trochimowicz and M.E. Maxfield. 1973. Review of lead studies in animals carried out at Haskell Laboratory - Two year feeding study and response to hemorrhage study.

In: Barth D., A. Berlin, R. Engel, P. Recht and J. Smeets, Ed. Environmental health aspects of lead: Proceedings International Symposium; October 1972; Amsterdam, The Netherlands. Commission of the European Communities, Luxemberg. p. 199-208.

Casto, B.C., J. Meyers and J.A. DiPaolo. 1979. Enhancement of viral transformation for evaluation of the carcinogenic or mutagenic potential of inorganic metal salts. Cancer Res. 39: 193-198.

Cooper, W.C. 1985. Mortality among employees of lead battery plants and lead producing plants, 1947-1980. Scand. J. Work Environ. Health. 11: 331-345.

Cooper, W.C. and W.R. Gaffey. 1975. Mortality of lead workers. In: Proceedings of the 1974 Conference on Standards of Occupational Lead Exposure, J.F. Cole, Ed., February, 1974. Washington, DC. J. Occup. Med. 17: 100-107.

Dingwall-Fordyce, I. and R.E. Lane. 1963. A follow-up study of lead workers. Br. J. Ind. Med. 20: 313-315.

DiPaolo, J.A., R.L. Nelson and B.C. Casto. 1978. In vitro neoplastic transformation of Syrian hamster cells by lead acetate and its relevance to environmental carcinogenesis. Br. J. Cancer. 38: 452-455.

Grandjean, P., H.C. Wulf and E. Niebuhr. 1983.Sister chromatid exchange in response to variations in occupational lead exposure. Environ. Res. 32: 199-204.

Kasprzak, K.S., K.L. Hoover and L.A. Poirier. 1985. Effects of dietary calcium acetate on lead subacetate carcinogenicity in kidneys of male Sprague- Dawley rats. Carcinogenesis. 6(2): 279-282.

Koller, L.D., N.I. Kerkvliet and J.H. Exon. 1986. Neoplasia induced in male rats fed lead acetate, ethyl urea and sodium nitrate. Toxicol. Pathol. 13: 50-57.
Nelson, D.J., L. Kiremidjian-Schumacher and G. Stotzky. 1982. Effects of cadmium, lead, and zinc on macrophage-mediated cytotoxicity toward tumor cells. Environ. Res. 28: 154-163.

Selevan, S.G., P.J. Landrigan, F.B. Stern and J.H. Jones. 1985. Mortality of lead smelter workers. Am. J. Epidemiol. 122: 673-683. U.S. EPA. 1984. Health Effects Assessment for Lead. Prepared by the Office of Health and Environmental Assessment, Environmental Criteria and Assessment Office, Cincinnati, OH, for the Office of Emergency and Remedial Response, Washington, DC. EPA/540/1-86/055. NTIS PB85-163996/AS.

U.S. EPA. 1986. Air Quality Criteria Document for Lead. Volumes III, IV. Prepared by the Office of Health and Environmental Assessment, Environmental Criteria and Assessment Office, Research Triangle Park, NC, for the Office of Air Quality Planning and Standards. EPA-600/8-83/028dF.

U.S. EPA. 1989. Evaluation of the potential carcinogenicity of lead and lead compounds: In support of reportable quantity adjustments pursuant to CERCLA Section 102. Prepared by the Office of Health and Environmental Assessment, Washington, DC. EPA/600/8-89/045A. (External Review Draft).
Van Esch, G.J. and R. Kroes. 1969. The induction of renal tumors by feeding of basic lead acetate to mice and hamsters. Br. J. Cancer. 23: 265-271.

HEALTH ADVISORY REFERENCES: None

VIRGINIA SCRAP
ROANOKE, VA
Soil Analytical Results
Debris Pile No. 1
(All soil concentrations are reported on a dry weight basis mg/Kg)

SAMPLE DATE	ERM T.R. NUMBER	SAMPLE NUMBER	DESCRIPTION	RESULTS (in ppm) SURFACE	Q	DEPTH	Q
04/11/95	21914	DP1-1	SURFACE	1060	L	-	
04/11/95	21909	DP1-1B	2 FEET	-		1030	L
04/12/95	21927	DP1-1C	2.5 FEET	-		103	L
04/11/95	21913	DP1-2	SURFACE	129	L	-	
04/11/95	21912	DP1-3	SURFACE	1140	L	-	
04/11/95	21911	DP1-4	SURFACE	177	L	-	
04/11/95	21910	DP1-5	SURFACE	171	L	-	
04/12/95	21917	DP1-6	SURFACE	1050	L	-	
04/12/95	21918	DP1D-6	SURFACE (DUPLICATE)	1410	L	-	
04/14/95	25464	DP1-6C	1.5 FEET	-		416	L
04/12/95	21919	DP1-7	SURFACE	1400	L	-	
04/12/95	21920	DP1-8	SURFACE	303	L	-	
04/14/95	25468	DP1-9	SURFACE	40.5	L	-	
04/15/95	25453	DP1-10	1.5 FEET	-		68.4	L
04/14/95	25467	DP1-10	SURFACE	5210	L	-	
04/14/95	25466	DP1-11	SURFACE	1700	L	-	
04/15/95	25454	DP1-11B	1.0 FEET	-		389	L
04/14/95	25465	DP1-12	SURFACE	554	L	-	
04/15/95	25455	DP1-13	SURFACE	28.2	L	-	
04/15/95	25452	DP1-14	SURFACE	723	L	-	
04/15/95	25456	DP1-15	SURFACE	484	L	-	
04/11/95	21908	DP1-1B	2 FEET EQUIPMENT BLANK#1	-		49	U

Qualifiers Code:
U - This compound/analyte was analyzed but not detected. The numerical value reported represents the quantitation/detection limit of the compound/analyte.
B: This result is qualitatively invalid because the compound/analyte was also detected in a blank at a similar concentration.
L: This result should be considered a biased low quantitative estimate.
K: This result should be considered a biased high quantitative estimate.
J: This result should be considered a quantitative estimate.
- : Not Analyzed
Note : Equipment blank are aqueous samples. These results are reported in µg/L (ppb) units.

VIRGINIA SCRAP
ROANOKE, VA
Soil Analytical Results
Debris Pile No. 2
(All soil concentrations are reported on a dry weight basis mg/Kg)

SAMPLE DATE	ERM T.R. NUMBER	SAMPLE NUMBER	DESCRIPTION	RESULTS (in ppm) SURFACE	Q	DEPTH	Q
04/11/95	21916	DP2-1	SURFACE	3560	L	-	
04/11/95	21915	DP2D-1	SURFACE (DUPLICATE)	2930	L	-	
04/12/95	21926	DP2-1C	1.5 FEET	-		37.2	L
04/12/95	21921	DP2-2	SURFACE	80.6	L	-	
04/12/95	21922	DP2-3	SURFACE	117	L	-	
04/12/95	21923	DP2-4	SURFACE	152	L	-	
04/12/95	21924	DP2-5	SURFACE	315	L	-	
04/12/95	21925	DP2-6	SURFACE EQUIPMENT BLANK#2	49	U	-	

Qualifiers Code:

U - This compound/analyte was analyzed but not detected. The numerical value reported represents the quantitation/detection limit of the compound/analyte.

B: This result is qualitatively invalid because the compound/analyte was also detected in a blank at a similar concentration.

L: This result should be considered a biased low quantitative estimate.

K: This result should be considered a biased high quantitative estimate.

L: This result should be considered a quantitative estimate.

- : Not Analyzed

Note : Equipment blank are aqueous samples. These results are reported in µg/L (ppb) units.

Appendix C
TCLP Analytical Results

GULF STATES ANALYTICAL, INC.
6310 Rodney • Houston, Texas 77040
(713) 690-4444 • FAX (713) 690-5646

ANALYSIS REPORT FACSIMILE

Date : August 16, 1995
Deliver To: Mr. Ross Miller
Company : ERM, Inc. (Roanake, Va.)
Phone : 703-776-3545
Fax Number: 703-776-8530

From : Lisa R. Mayfield
Company : GULF STATES ANALYTICAL, INC.
Fax Number: (713) 690-5646

Attached are the analytical results for the samples you submitted on August 11, 1995 under your Project Number J9601.02.01 and assigned to GSAI Group Number 17388.

Our A2LA accreditation requires that, should this report be reproduced, it must be reproduced in total.

Thank you for selecting Gulf States Analytical, Inc. to serve as your analytical laboratory on this project. If you have any questions, please feel free to contact me at any time.

GULF STATES ANALYTICAL, INC.
6310 Rothway • Houston, Texas 77040
(713) 690-4444 • FAX (713) 690-5646

ANALYSIS REPORT

ERM, Inc. (Roanoke, Va.)
3140 Chaparral Dr.
Suite 201
Roanoke, VA 24018

Attn: Mr. Ross Miller
Project: VA Scrap Iron and Metal Company

Sample ID: CS-DP1
Matrix: Soil
EPA Sx #: 025931

GSAI Sample: 94180
GSAI Group: 17388
Date Reported: 08/16/95

Discard Date: 09/15/95
Date Submitted: 08/12/95
Date Sampled: 08/11/95
Collected by: RM
Purchase Order:
Project No.: J9601.02.01

SDG #:

Analytical Results and Detection Limits are dry weight corrected for solid matrices.

Test	Analysis	Results	Units	IDL/CRDL/LOQ
0111	Moisture	4.0	%	0.10
	Method: EPA 160.3			
LTQ	Metals, TCLP by ICP, Trace			
	Method: SW-846 6010			
	Arsenic	U	mg/l	0.01
	Barium	1.6	mg/l	0.001
	Cadmium	0.61	mg/l	0.001
	Chromium	0.01	mg/l	0.001
	Lead	0.79	mg/l	0.003
	Selenium	0.04	mg/l	0.01
	Silver	U	mg/l	0.0003
0259U	Mercury on TCLP Extract	U	mg/l	0.0001
	Method: SW-846 7470			

Respectfully Submitted,
Reviewed and Approved by:

Lisa R. Mayfield
Lisa R. Mayfield
Project Manager

GULF STATES ANALYTICAL, INC.
6310 Rothway • Houston, Texas 77040
(713) 690-4444 • FAX (713) 690-5646

ANALYSIS REPORT

ERM, Inc. (Roanoke, Va.)
3140 Chaparral Dr.
Suite 201
Roanoke, VA 24018

Attn: Mr. Ross Miller
Project: VA Scrap Iron and Metal Company

Sample ID: CS-DF2
Matrix: Soil
EPA Sx #: 025932

GSAI Sample: 94181
GSAI Group: 17388
Date Reported: 08/16/95

Discard Date: 09/15/95
Date Submitted: 08/12/95
Date Sampled: 08/11/95
Collected by: RM
Purchase Order:
Project No.: J9601.02.01

SDG #:

Analytical Results and Detection Limits are dry weight corrected for solid matrices.

Test	Analysis	Results	Units	IDL/CRDL/LOQ
0111	Moisture	4.2	%	0.10
	Method: EPA 160.3			
	TCLP Metals, TCLP by ICP, Trace			
	Method: SW-846 6010			
	Arsenic	U	mg/l	0.01
	Barium	2.3	mg/l	0.001
	Cadmium	0.09	mg/l	0.001
	Chromium	0.05	mg/l	0.001
	Lead	0.69	mg/l	0.003
	Selenium	0.03	mg/l	0.01
	Silver	U	mg/l	0.0003
0259U	Mercury on TCLP Extract	U	mg/l	0.0001
	Method: SW-846 7470			

Respectfully Submitted,
Reviewed and Approved by:

Lisa R. Mayfield
Lisa R. Mayfield
Project Manager

ERM, Inc. (Roanoke, Va.)
GSAI Group: 17388

Qualifiers:

Organic:

U - Indicates compound was analyzed for but not detected.
J - Indicates the presence of a compound where the result is less than the CRQL but greater than zero.
B - Indicates that an analyte found was also found in the associated method blank.
E - Identifies compounds whose concentrations exceed the calibration range.
D - Indicates all compounds identified in an analysis that were analyzed at a secondary dilution.
P - Identifies that the difference in the concentration of a Pesticide/Aroclor target analyte is greater than 25% between the two columns.
C - Applies to Pesticide results where the identification has been confirmed by GC/MS.

Inorganic:

U - Indicates compound was analyzed for but not detected.
B - Indicates that a reported value was less than CRDL but greater than the IDL.
* - Duplicate analysis not within control limits.
' - The reported value is estimated because of the presence of interference.
- Spiked sample recovery not within control limits.

Furnace Qualifiers Only:

W - Duplicate injection precision not met.
+ - Correlation coefficient for the MSA is less than 0.995.
W - Post digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.
S - The reported value was determined by the Method of Standard Additions (MSA).